PULP & PAPER INDUSTRY

"The Cellulose Age"

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EDITORIALS

"A Waste is a Waste is a Waste"

Gertrude Stein's famous poem "a rose is a rose is a rose" must now take a back seat to a U. S. Forest Service symphony on the word "waste."

This branch of the Department of Agriculture recently issued a press release sensationally headed "Forest Service Says More than Half Annual Timber Crop Is Wasted or Burned." It was prominently published by many newsprint-hungry newspapers and even by some trade journals.

In this news release of only 70 typewritten lines, the Forest Service writer used the word "waste," "wasting" or "wastage" no less than 27 times. Largest amount of "waste," it said, is in manufacture of lumber, pulp and paper, veneer, railroad ties, and other "primary" products.

The news release is based on a 50-page book-size pamphlet printed by the government and containing a lengthy discussion and numerous statistics dealing on the subject of "wood waste." How many times the word "waste" is used in that pamphlet we'll leave to your imagination—we just can't spare the time to count up the score.

The effect of all this is an indictment of industry, including the pulp and paper industry.

Intimate experiences with the wartime uses of propaganda have made most good editors in this country wary of such persistence in the repetitious use of a word—in fact, wasn't it Hitler himself who said that even obvious untruths will be swallowed by the public if repeated often enough?

The Forest Service in its booklet says arbitrarily: "Throughout this report the term wood waste means wood material from the forest which does not appear finally in marketable products other than fuel wood, regardless of whether it is economically or technologically feasible to utilize it." But this explanation is not to be found in the press release which was sent to every important newspaper in the United States.

The Forest Service use of the word "waste" as a verb implying deliberate acts by industry—is especially unfair and is certainly inconsistent with the Webster dictionary definiton:

"To spend or expend needlessly, carelessly, or without valuable result; to consume or employ prodigally, idly, or without any considerable return or effect; to apply to useless ends; to squander; to bestow without return of appreciation or gratitude; as to waste property, time, effort, or sympathy, as on or upon someone or something."

In its 50-page book, the Forest Service gives not a single line of credit to the millions of dollars being spent by industry to find economically feasible ways of more closely utilizing forest resources.

There is not one word about hydraulic log barking, developed at great expense during the war by private industry, which now makes it possible to produce as much pulp from four trees as was previously made from five, thus permitting a reduction of pulpwood forest cut by 20% annually. Nor does it mention the successful research by private industry to utilize new wood species for pulp, much of which previously had only fuel value. The book, of course, mentions an "investigation" by another government agency, TVA, to utilize bark, but there is not a word about Weyerhaeuser Timber Co.'s actual success in developing several commercial bark products, already being marketed.

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A UNION LEADER APPRAISES MANAGEMENT'S LABOR POLICIES

By Chester Jordan

Member of AFL Paper Makers' 4-Man "Research Committee" which toured continent to study management-employe and union-employe relations.

A Member of Quebec Local 250, IBPM, he is also President of Quebec Provincial Council of Paper Mill Unions.

Mr. Jordan wrote this article especially for PULP & PAPER INDUSTRY.

There are several outstanding impressions left in my mind as a result of the survey made by the special research committee for the International Brotherhood of Paper Makers of which I was a member.

The most important I believe is the sincerity of the paper company executives in their desire to establish harmonious relations with their employes. I would go further and say that those whom we met surely sincerely believed in union-management collective bargaining as the best means of bringing this about.

There was, however, as could be expected, a wide range of personalities and viewpoints. There was the type who impressed you at once as open, free and aboveboard, ready to place his cards upon the table, and see if you could beat them (no window dressing). This type put you at ease and you felt he had nothing up his sleeve and did not wish for any advantages he was not prepared to grant you. To my way of thinking this type would earn the respect and confidence of his employes. Once he has gained that respect and confidence, based on democratic fairness, he will have eliminated most of his labor-relations problems.

Another type seemed to be sincere but was reserved and diplomatically cautious. In this group were some who were evidently of the paternalistic type. They think unions are "all right—but." They are the disappointed ones because their employes thought it necessary to form a local union for bargaining purposes "after all we had done for the men," but were prepared to go along and make the best of it.

Another lasting impression is the interesting fact that some companies pick their personnel men from the ranks of their employes and in most cases they have had experience as union officials. This seems to be a custom on the Pacific Coast of the United States. Other companies pick university men who probably, in most cases, have studied industrial relations.

CHESTER JORDAN, 123 Jeanne D'Arc St., Quebec City, Quebec, who served on the Brotherhood of Paper Makers (AFL) special Research Committee making a continent-wide tour of mills to study employe-management relations and union affairs, was invited by PULP & PAPER INDUSTRY to report observations he made on his trip. The article on this page was his response to that invitation. He is also President of the Quebec Provincial Council of Paper Mill Unions.

It is another question of the practical man versus the technically trained man. I favor the practice of picking the men who have been through the mill who, whether university-trained or not, talks the languages of the employes, and because of his own experiences, quickly understands, not only a situation as presented by the different angles that have a bearing on the matter. He knows the underlying jealousies and suspicions that lead up to or has an important bearing on many situations because he has lived with them and perhaps had these faults himself. The usual type of union official or member will not take a position as personnel man unless he is satisfied the company's general labor policy is right according to his own convictions. Having a job, upon which he can stay if he wishes he can, therefore, be independent in his choice and he will place the principles involved in good labor relations above the question of position.

The fellow just out of school or whose knowledge of industrial relations problems are purely academic is out to establish himself in a position and is looking ahead to future prospects of advancement. In this state of mind he is quite apt to put the question of position ahead of the principles of ideal management-labor relations. I do not wish to suggest lack of principle on the part of these men. I suggest they will be apt to support and try to put over a poor policy because of loyalty to a company and appreciation for the opportunity to establish themselves. In my mind I can picture some trying to raise a cheer for the company and the boss in the spirit of the old school fraternity days, working themselves into a lather in support of policies dictated to them, regardless of the soundness of their own personal beliefs.

During our survey we met top management representatives of the industry who were connected with companies whose labor policy we knew to be tops. But, when meeting employe representatives of the same companies we often heard bitter complaints about treatment they received at the hands of some foreman. Management certainly falls down on the job, when they establish a good labor relations policy and sincerely intend that it be implemented in a way that will create a contented and loyal group of employes, if they allow departmental superintendents or foremen to ruin that purpose.

Southern Mill's "Complaint" Dept.

We found an interesting arrangement at one of the mills in the South. Help was scarce and most of the mills were short handed and had a high labor turnover. At this mill they had taken a man from operations and given him the job of interviewing all men who quit or wanted to quit. It was his job to hear all the complaints and gripes and to do what he could to remedy matters so as to keep the men. Sometimes the reasons for quitting or the complaints concerned operations and sometimes they were personal matters. In either case it was the job of this man to do what he could find in the way of corrections.

This fellow was well acquainted with most of the men as he had worked with them. He was not set up in an office with a glass topped mahogany desk where a man in overalls would hesitate to go, but had a cubby hole in the corner of

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Interviewed by PULP & PAPER

PRESIDENT BLANCKE TELLS WHY CELANESE CORP. ENTERS PULP INDUSTRY

Fundamental purpose of Celanese Corporation of America's entrance into the pulp industry is the same as its original purpose in entering the industrial chemical industry—to protect its physical supply of essential raw materials and make possible the expansion required by increasing the demand for its products. In conjunction with this objective, it is the policy of Celanese Corporation of America, insofar as practical, to make its raw materials available to its competitors. This will be made evident in the operations of the new pulp mill, on which construction will soon start, in the Prince Rupert area of British Columbia.

Last month Harold Blancke, president, stated the policy to PULP & PAPER in his offices at 180 Madison Ave., New York City. "There is nothing new about this Celanese policy," Mr. Blancke said, "but merely our way of doing business. What we plan to do in British Columbia parallels what already has been done in our Bishop, Texas, chemical plant.

"It is in the best interests of our company and our industry to have strong competitors help us develop and consolidate our markets and develop new end uses for our products. It is also our policy to protect our sources of supply by buying at least 50% of our requirements from outside sources.

"Our chemical plant was built on an extremely unique process based on about 12 years of intensive research. In addition to producing and supplying certain of our own requirements of acetic acid and acetone, we are selling very substantial quantities of these materials to the trade.

"We believe that the entrance of Celanese Corporation of America into the cellulose field is something that is justified and absolutely essential for it asssures our increased production from a cellulose standpoint."

Mr. Blancke emphasized that Celanese is not a newcomer in the industry. "It is not a move entirely dictated," he said, "by the current tight supply and the estimates for the future. As some undoubtedly know, Celanese has been investigating pulp mill sites in the United States and Canada for the past 15 years and for many years has carried on extensive research in cellulosic chemistry and the operation of pulp mill pilot plants.

HAROLD BLANCKE, President of Celanese Corp. of America, who tells why his company has entered pulp industry in interview on this page.

"In the Port Edward area we feel we have what we want in the way of timber, mill site, water supply and power facilities and labor supply."

Mr. Blancke has personally surveyed the British Columbia area. His belief in sharing supply is strengthened by his knowledge of the existing world timber situation and the increased importance of wood cellulose in the rayon and cellulose acetate field.

He expressed himself as particularly pleased with the reception given Celanese by the British Columbia provincial government and the Canadian public.

"They seem to want us," Mr. Blancke said, "and on our part we are going to try to be good industrial citizens just as we are keeping in mind that we are now part of the great North American pulp industry."

As reported in our June issue, Mr. Blancke said that the Port Edward Island operation has been broadened to include a bleached kraft mill as well as the bleached sulfite operation. When completed it is likely to be one of the largest pulp operations in the world.

Mr. Blancke flatly discarded the rumors that have been current that the mill would include the production of propionate flake and enter into products other than pulp.

First Contract for New Celanese Corp.

First contract to be let by Port Edward Cellulose Co. (Celanese Corp. of America subsidiary) in connection with the construction of its $15,000,000 high grade sulfite and kraft pulp mills near Prince Rupert, B. C., has been awarded to British Columbia Bridge & Dredging Co. for excavation of 300,000 yards of rock and muskeg for a foundation for the mills.

The Port Edward Cellulose Co. has established administrative offices on the ground floor of the Brooksbank building in Prince Rupert, with E. R. Barr, formerly of the War Assets Corporation, in charge.

D. G. Stenstrom, with offices at 640 West Hastings Street, Vancouver, is west coast representative of the company.

Million and Half Acres For Celanese Mill

Representatives of the British Columbia forest service state that the timber limits of the Port Edward Cellulose Co. extend over a million and a half acres and that it will require some time to complete arrangements for the long-term management of the forest.

Surveys are now being made to determine the full extent of the timber area and the most adavntageous way of developing it. Most of the forest is under the direct control of the provincial government, but there are a few private holdings in the country placed under reserve to the Port Edward company. Most of these are in the name of small operators and their existence will not interfere with the long-range plans of the pulp company.

Port Edward Cellulose Co. was the first to apply for a forest management license in conformity with terms set forth in legislation passed by the British Columbia legislature at its last session. This provides for the operation of a "working circle" with the cut of timber regulated acoerding to natural regeneration of the forest.

Stadler, Hurter & Co. Retained by E. B. Eddy

Stadler, Hurter & Co., Montreal engineers, who planned the Long Lac pulp mill development at Terrace, Ont., and who have been engaged to design plans for the Port Edward Cellulose Co.'s mills at Watson Island, near Prince Rupert, B. C., are being consulted regarding E. B. Eddy Co.'s plans for extension of its paper mill at a cost of about $180,000.

Provincial Adds Units

E. L. Goodall, manager of the Port Arthur mill of Provincial Paper Co. in Ontario, announces that expansion to cost about $400,000 will be undertaken this year, in addition to developments carried out last year at similar cost. It includes enlargement of finishing room and super-speed calendering.

THESE GENTLEMEN FIGURED IN INDUSTRY NEWS DURING PAST MONTH:

Left to right: MILTON R. BAILEY, former Kalamazoo bank Vice President and in charge of Bulkley, Dunton Pulp Co.'s Kalamazoo office since 1939, who becomes a Vice President of that company (also made a Vice President is Elmer J. Rose, who represents the pulp company on the Eastern seaboard).

ARTHUR C. DRESHFIELD, who resigned as Tech. Director, H. P. Smith Paper Co., to open his own consulting office at 401 West Elm Ave., LaGrange, Ill. His fields will be stock preparation, sizing, coating, laminating and saturating.

HAROLD P. MURDOCK, of Asheville, N. C., now in Tokyo as Pulp & Paper Specialist on General MacArthur's staff. He has been appointed as Far East member of United Nations committee to consider chemical uses of wood on worldwide basis.

ELMER W. COFFEE, formerly with Chicago printing houses and H. P. Smith Paper Co., who has been appointed Plant Engineer of St. Regis Paper Co. (Bryant Div.), Kalamazoo, Mich.

HORACE W. HOOKER, JR., Cornell alumnus, appointed Purchasing Agents for Hooker Electrochemical Co., Niagara Falls, N. Y.

E. H. WALTHERS, who became Manager of Seattle office of Zellerbach Paper Co., after serving as Supervisor of headquarters sales in San Francisco.

Editorial

(Continued from Page 21)

There is not a word about the actual wood salvage operations now being carried out on logged-off lands in the west, where in some places about 20 cords of broken, defective and small wood per acre are now being recovered even at a financial loss. Until now, the high lead, heavy type of equipment used in the Far West and the high cost of woods labor had made it impractical to recover this wood. It would surely have been "wasteful" to try to log it. Only the research and development of light, mobile inexpensive equipment by private companies has given some hope today that ways may yet be found to do this economically.

The Forest Service says lumber mills employ wasteful methods in burning wood for fuel, but it doesn't suggest more efficient methods. There is no suggestion that the government-owned power resources of the Far West might be employed at a reasonable rate schedule to replace wood as fuel for mills.

The Forest Service talks glibly of lignin and sugars going to waste with some cellulose in pulp mill streams. But there is no mention that the North American pulp and paper industry is spending annually in 16 colleges and institutions about $400,000 (not to mention what each mill spends in its own laboratories) upon research projects aiming to eliminate this loss. The Forest Service does not mention that most of this money has gone "down the drain," too, as far as chances of any of the mills getting value received. Lignin itself is still an element which some of the best brains in science know very little about. Whatever small-scale savings have been made of pulp mill "waste" have been achieved by the research and efforts of the individual mills.

Another quick gander in Webster's reveals that the word "wastage" also means "loss by decay." We wonder why the so-comprehensive Forest Service report doesn't mention the millions of cords of overmature timber locked up in government-owned forest lands which are rotting and decaying.

Could it be that this apparent infatuation for the word "waste" has behind it a Forest Service campaign to "condition" the American public for even greater government control and administration of our forests and forest products industries?

This would seem to be a reasonable conclusion, as the Forest Service has actually made specific recommendations for employment of an additional great horde of government "agents" to give orders to large and small woodlot owners and for a vast outlay of additional government money for research in wood (despite the fact the results of government research so far compare with the achievements of private industry's forest research as the Middle Ages compare with the 20th Century).

Among the "lines of action" suggested in the report and press release were "technical assistance" (no doubt by government theorists) for woodlot owners and processors and "extension of sustained yield forest management" and further "research" (by the Forest Service, of course).

Congress Holds Key to Deal For Alaska Pulp Mill

Said U. S. Congressman Henry M. Jackson (Dem. of Washington) in an exclusive statement to PULP & PAPER as this issue went to press:

"I am advised that there is a good possibility that Congress will act favorably on the Alaska pulp matter before adjournment.

"The Agriculture Committee reported favorably on July 10th on HJRES-205 which, I understand, has the approval of the industry. Similar action is being taken in the Senate. It appears to me that enactment of this legislation at the present session would assure the pulp and paper industry going ahead with the program this Fall."

The House passed the bill July 15.

Under this bill, the ex-Secretary Ickes-instigated Indian claims to the best pulpwood areas in Alaska under an "aboriginal rights theory" would be settled, if u p h e l d, by lump sum payments to the Indians by the government from proceeds of sale of the timber. All suitable pulp timber in Alaska is under U. S. Forest Service control (Agriculture Department) but the Indian claims started by the rival Interior Department have caused doubts regarding any deal that might be made with private industry.

By the way, what about your aboriginal rights, dear reader?

Canadian Technical Section Will Meet in Far West in 1948

Technical section of the Canadion Pulp and Paper Association will meet on the Pacific coast for the first time when it holds its annual summer meeting in Vancouver, B. C. in early September, 1948 (tentative dates, Sept. 4-6). TAPPI members in the U. S. have been cordially invited to attend.

Decision to convene in the far west was reached at the highly successful sessions, on July 11, 12 and 13, at the Algonquin Hotel, St. Andrews-by-the-Sea, New Brunswick. Incidentally, it was the first time the section had met in the Maritime provinces.

When delegates go to the other extremity of Canada next year plans will be made for most of them to visit Powell River, Ocean Falls and other pulp and paper manufacturing centers of British Columbia.

At St. Andrews there were more than 200 delegates. In addition to all sections of Canada, the United States, Newfoundland, India and the United Kingdom were represented.

During the meeting an honorary life membership was presented by Chairman R. J. Askin, Abitibi Power & Paper Co., to H. O. Keay, Consolidated Paper Corporation. One of the guest speakers was Dr. Milton Gregg, V. C., president of the University of New Brunswick. Another was F. L. Mitchell, general manager of the Canadian Pulp and Paper Association, who emphasized the importance of effective research.

Dr. J. Miles Gibson of the University of New Brunswick spoke on forest management and better forest utilization. He pointed out that about 90% of the forest lands in Canada are controlled by provincial governments and for that reason the whole nation had a stake in their productiveness. He emphasized importance of perpetual yield management and maximum log use.

Dr. Gregg suggested that the industry should establish a permanent liason committee to discuss and explore with educational authorities all matters affecting the training and development of future engineers. He added that some of the industry's profits might be earmarked to provide post-graduate opportunities for young engineers.

John S. Hart, of the Pulp and Paper Research Institute of Canada, led a discussion of results obtained in alkaline pulping studies being carried out by the institute, and C. H. Knight, Dorr Co., spoke on causticizing aspects.

F. C. Stamm, Stamm Drying Controls, gave a paper on board machine drying and P. Goldsmith, Pusey & Jones Corp., outlined the advantages in modernizing the Canadian board machine operations.

F. W. Elliott, Howard Smith Paper Mills, Ltd., described a new electronic sizing test, which led to a general discussion on the sizing of paper and dirt in paper. A. B. Sinclair, Price Bros. & Co., discussed unit sub-stations, and R. M. Brown, Stadler, Hurter & Co., read a paper prepared by J. N. Franklin, Bowater's Newfoundland Pulp & Paper Mills, on the process instrumentation committee's plans.

H. Freeman, Consolidated Paper Corp., talked of a new method of pitch control in newsprint manufacture, and there was a general debate on the practical aspects of newsprint machine operation at higher speeds, with particular reference to headbox changes, led by L. Corcoran, Anglo-Canadian Pulp & Paper Mills, and F. Lavallee, Albitibi Power & Paper Co.

E. F. Tucker, Stebbins Engineering & Manuf. Co., spoke on installation, care and new developments in acid resistant tile or brick linings.

INDUSTRY MEETINGS

TAPPI Fundamental Research	Appleton, Wis.	Sept. 3-5
TAPPI Engineers Fall Meeting, Philadelphia		Nov. 3-5
TAPPI Kraft Industry Fall Meeting	Asheville, N.C.	Oct. 9-11
Supts.—Southern & Southeast Divisions	Asheville, N.C.	Oct. 9-11
TAPPI Pacific Coast Section	Longview, Wash.	Sept.9
Supts. N.Y.-Canadian Division	Murray Bay, Que.	Sept. 8-12
Supts. Northeast Division	Poland Spring, Me.	Sept. 18-20
Supts. Penn.-N.J.-Del. Division	Wilmington, Dela.	Oct. 3-4
TAPPI Kalamazoo Valley Section	Kalamazoo, Mich.	Oct. 2
TAPPI Lake States Section	Appleton, Wis.	Oct. 14
National Supts. Convention	New Orleans	May 18-20, 1948
Technical Section, Canadian Ass'n.	Vancouver, B.C.	Sept. 4-6, 1948

Coast TAPPI Plans Series of Meetings

Chip handling and chip quality will be the subjects of a round table discussion which will feature the first Pacific Coast TAPPI section meeting of the new season in Longview, Wash., on Tues., Sept 9.

A meeting of the Coast TAPPI executive committee under Dr. Joseph L. McCarthy of the University of Washington decided that a program of afternoon round table discussions on selected subjects, followed by a dinner and evening of entertainment, will be continued in the forthcoming season. Its success in recent years has been attested by many members.

Richard Hammond of the research department of the Weyerhaeuser pulp division will arrange the Longview program.

Dr. Robert Brown of Rayonier Incorporated, Hoquiam, Wash., is chairman in charge of arranging for persentation of Shilby contest papers by young mill employes at each meeting.

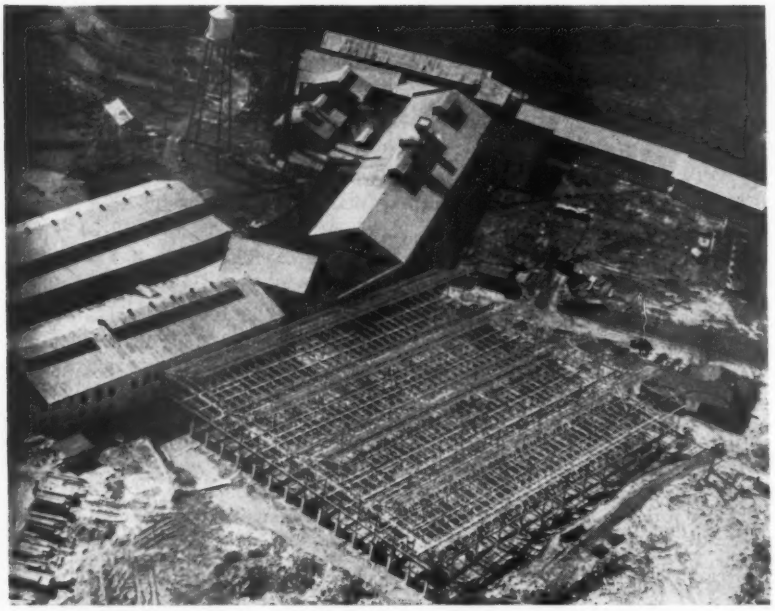
Vice Chairman Harold Wall of Longview Fibre Co. heads the general program committee for the meetings.

The second meeting will be on Nov. 4 at Everett, Wash., when laboratory gadgets will be the round table topic. A January meeting in Camas will have research for its theme, and engineering will feature the April meeting in Tacoma, Wash.

Johnson of Puseyjones On Trip to West

R. S. Johnston, vice president of Pusey & Jones Corp., papermaking machinery manufacturers of Wilmington, Del., during the past month made his first long trip for his company since attending the TAPPI kraft industry meeting in New Orleans last fall. He traveled to the Pacific Coast, visiting points from Vancouver, B. C., to Los Angeles.

Much New Equipment Now Producing At Improved Rate in Orange, Texas, Mill



BIRD'S EYE VIEW showing construction of new addition to Bag Factory of Orange Pulp & Paper Mills, Orange, Texas.

In 1935, the present owners of the Orange Pulp & Paper Mills, Inc., with a great deal of foresight, acquired this property which had been standing idle for ten years in Orange, Texas. Many in the Southern industry wondered if they could make it "tick," for the record of this historic old plant—the grandfather of the Southern kraft industry—was not too successful.

The first attempt to make paper from southern pine was inaugurated by Smith & Thomas in Pensacola, Florida, in 1903. Later, their experimental plant was visited by an Orange, Texas, lumberman who subsequently acquired the equipment and moved it back to his home town.

Here experimental work continued for several years. Finally, in 1911, the process was changed from soda to sulfate and under the direction of the late Edward Mayo, commercial production proved successful. In 1913, a second mill was built at Moss Point, Miss., and two years later the old Braithwaite, La., plant was converted into successful sulfate production.

As for the Orange Pulp & Paper Mills, the 1935 turning point was the first step forward in a long program of modernization which today includes the very latest mechanical

Executives at Orange Pulp & Paper Mills, Orange, Texas, left to right: ANTOLE J. "NAT" NAVARRE, Plant Superintendent; W. H. KENNEY, Chief Chemist; FRANK MILLER, Chief Electrician.

developments. The major changes, particularly during the past five years, have been completed by the present mill staff without outside engineering aid—and without stopping production. No longer is there any question as to the ability of this mill to produce a quality kraft paper. Year after year it supplies its parent company, the Equitable Paper Bag Co., Inc., whose main offices are at Long Island City, N. Y., with a large variety of specialty kraft papers for merchandise bags and shipping sacks.

Ever since the present management took over the mill in 1935, E. I. Hardy has been general manager. During the past five years, Anatole J. Navarre has been plant superintendent. Mr. Navarre is a past chairman, of the Southern Division, American Pulp & Paper Superintendents' Association.

Today the mill would be a complete surprise to its original founder. The 100-inch Pusey & Jones Fourdrinier paper machine, installed at the Orange Mill in 1906, was designed to operate at a speed of 350 feet per minute. When the present ownership took over the plant, the machine was re-built to operate at 700 feet.

The big modernization program during the past four years was instituted in an effort to bring the production to 1000 FPM or better. To this end, a new modern Pusey & Jones wet-end was installed. Also, many improvements to the press section, the dryer section and a new reel and rewinder were installed in addition to new Shartle machine drives. These new additions are illustrated in pictures accompaning this article and taken at Orange by a PULP & PAPER Industry editor.

The Orange Mill, which purchases its pulp, has modern pulp-handling equipment and has had to provide additonal storage space for 1000 tons to accommodate its greater machine capacity. The pulp moves into the mill over an inclined conveyor to a 100 - ton capacity breaker - beater, thence by gravity flow to a Stebbins tile-lined chest that is equipped with a Black-Clawson agitator. From this chest it is sent by a centrifugal stock pump to three beaters at 4½% consistency. Color, size, and other chemicals are added, all dupming into a common beater dump chest. The stock is continuously discharged by a pump to the machine stock by a Noble & Wood propeller agitator. Re-worked waste paper is also added into the same machine chest.

Stock is then moved from the machine chest by a centrifugal pump at 3¾% consistency regulated by a Trimbey through five jordans of combined 1000 horsepower. These include three Shartle-Miami and two newly acquired E. D Jones Majestic units.

From the jordans, the stock moves direct to the machine stock regulator, made of stainless steel; thence to the machine mixing pump where wire pit white water is added and the new mixture discharged by means of a Fairbanks-Morse pump to the headbox. The newly installed complete headbox and slice are of the latest hydromatic Black-Claw-

son design. The two rectifying rolls are also Black-Clawson.

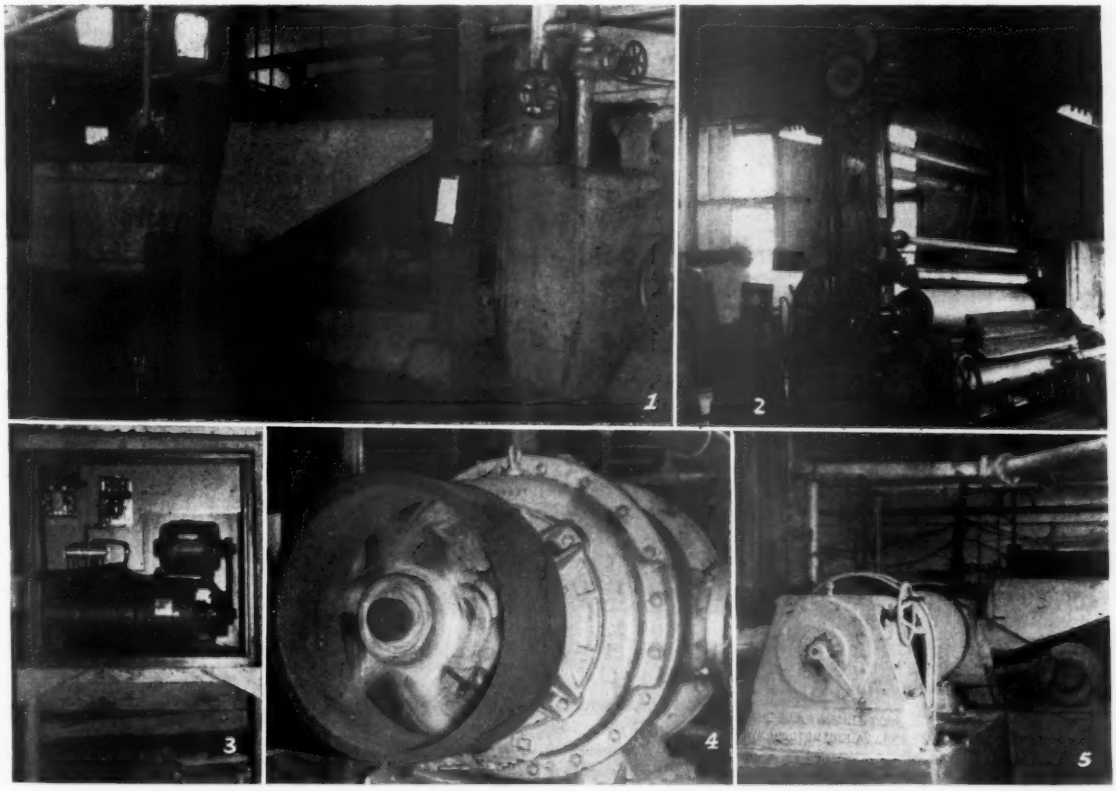
The paper is formed on a new Pusey & Jones Fourdrinier with a 113-inch wide by 80-foot long taking wire. The Pusey & Jones shaker is operated by a Reliance motor "packaged unit," of the type described in PULP & PAPER Industry North American Review Number of this year and also in our last issue. The new suction press couch and new first press were furnished by Downingtown Mfg. Co. All framework was rearranged to accommodate ball bearings, which replace friction bearings throughout.

The press section consists of a first press of suction type, a straight second press, and a third press used for smoothing. Both wet felts are served by modern Vickery felt conditioners supplied by Bird Machine Co. The felts are 114 inches wide by 42 feet long, equipped with motor driven stretch of latest design. The press rolls are equipped with doctors. The machine is driven by a newly installed D. J. Murray Mfg. Co. steam turbine drive operating through Black-Clawson gears. The suction couch, suction press, and conditioners are serviced respectively by three Nash suction pumps. The suction boxes are serviced by an older installation furnished by the Connersville Suction Pump Co. The white water system, furnished with a Bird Saveall, was completely remodelled. The line shaft formerly used to drive the machine auxiliaries was discontinued and replaced by directly connected motors with V-belt drives.

Orange, Texas, is far away from other pulp and paper regions in North America—even those in other regions of the South. Nevertheless, it wasn't too far away for PULP & PAPER Industry, which brings its readers this first-hand, "on-the-spot" story of recent interesting developments at this historic mill on the Sabine River. Our Southern editor drove there to get pictures and story.

The paper machine drying is accomplished with 30 four-foot diameter dryers with maximum strain of 33 pounds. A complete J. O. Ross Engineering Corp. heat control system has been installed during March, 1947. This installation includes a Ross-Grevin hot air system hood modern in every detail. Drainage is by Sterling condensate pumping units. The dryers are in two sections, driven by Black-Clawson spiral and closed bevelled gear sectional units with friction contact by Twin Disc Clutch Co. The dryers are equipped with conventional paper carrier ropes. All dryer felt carrying rolls are equipped with newly installed roller bearings. The two top and two bottom felt dryers are new.

The paper is finished by a nine-roll Pusey & Jones calender that has been installed for some time. However, new doctors have been added. A recent addition has been a modern pneumatic control and Pope reel, furnished by Pusey & Jones. There is also a new Cameron Machine winder. Speeds in excess



VIEWS OF EQUIPMENT at Orange Pulp & Paper Mills, Orange, Texas, recently visited by PULP & PAPER Industry:

1. Bird Machine Co. Screen showing Breaker Beater in background.

2. Cameron Machine Co. 18 Winder, with Foxboro Control, Pope Reel and Westinghouse Induction Motor Drive.

3. Reliance Electric & Engr. Co. VSE Conversion Unit (with door off) supplying shaker motor. This "packaged" unit is completely enclosed in box and equipped with air filter.

4. Nash Engineering Co. L-9 Vacuum Pump serving Suction Couch (Nash L-7 Pumps serve first press and conditioner.)

5. Pusey & Jones Corp. Shaker for Fourdrinier with Reliance Elec. & Engr. Co. VSE Rotating Type Drive Motor.

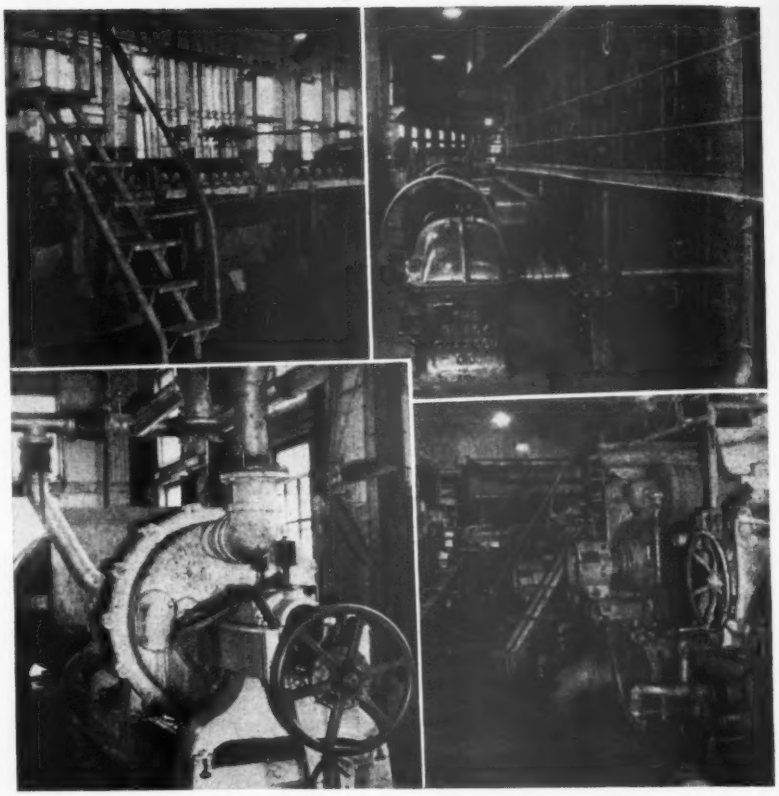
of 1000 feet per minute have been attained since the machine has been re-worked.

In addition to revamping the white water system, the filter water system was done over; the stock chest re-designed; a new tiled stock chest added. Water supply was augmented with Layne-Louisiana Mill supply pump. Gilbert-Nash guides were provided throughout. In addition, a new lighting system, safety guards throughout, and new dressing room facilities improve conditions for employees.

All power used is generated with a 1250 kw G. E. turbine and a 500 kw Westinghouse turbine in their own power plant using natural gas for fuel.

The Orange Mill, as revamped, produces 50-60 tons per day, on specialty grades of kraft paper.

Nearing completion at the same location is a brand new, modern 100,000 sq. foot addition to the bag factory. Now, modern, high-speed bag converting equipment will be installed to double present production. The Orange bag plant is managed by William N. Levine, and Eugene Schmitz is its superintendent. Both of these men have been associated with this enterprise since its inception.



EQUIPMENT AT ORANGE PULP & PAPER MILLS, Orange, Texas, visited recently by PULP & PAPER Industry.
Upper Left: Pusey & Jones Corp. Fourdrinier, trim 100 inches.
Upper Right: Black-Clawson Spiral and Closed Bevel Drive with Twin Disc Clutch for Dryers.
Lower Left: E. D. Jones & Sons Co.'s A-376 Majestic Jordan.
Lower Right: Downingtown Mfg. Co.'s Press Section.

Delaware Cruise Planned for TAPPI Engineers; Kraft Groups to Meet Separately in Asheville

A cruise along the historic Delaware River—a cruise which will give participants an unusual view of great industrial plants between Philadelphia and Wilmington, Del.—will be a highlight of the TAPPI Engineers' Meeting scheduled for Nov. 3, 4, and 5 at Philadelphia.

The host on this expedition which is going to be made with a great deal more comfort than George Washington's trip on that river, will be the Pusey & Jones Corp. It will be about a 2½-hour trip, starting after morning sessions on Tues., Nov. 4, if present plans are carried out. Very likely one of the ships which Pusey & Jones built when that papermaking machinery firm was in wartime shipbuilding as "a sideline" will be used and the cruise will pass by various industrial plants including the big Scott paper mill at Chester.

A tour of Pusey & Jones plant showing equipment in various stages of construction will follow and a dinner will be given at the Wilmington Country Club, with return to Philadelphia by train.

The Alkaline Pulping and Chemical By-Products Fall Meeting of TAPPI will be held jointly with the Southeastern and Southern Divisions of the American Pulp and Paper Mill Superintendent's Association in Asheville, N. C. As announced in this magazine last month, the dates for this meeting will be Thursday, Friday and Saturday, Oct. 9, 10 and 11.

The Technical Association program will be administered by two TAPPI committee chairmen, K. G. Chesley, director of research, Crossett Industries, Crossett, Ark. (alkaline pulping), and W. P. Lawrence, research director of Champion Paper & Fibre Co., Canton, N. C. (chemical products).

The Superintendent's program will be taken care of by A. M. Schultz, superintendent, Camp Manufacturing Co., Inc., Franklin, Va., chairman of the Southeastern Division of the Superintendent's Association, and James R. Almand, paper mill superintendent, Union Bag & Paper Corp., Savannah, Ga., chairman of the Southern Division.

The Superintendents and TAPPI will carry on meetings of their own simultaneously, but all entertainment will be handled jointly. The local committee is leaving no stone unturned in making arrangements to make this meeting a success, according to Dr. Ward D. Harrison, assistant general manager, Ecusta Paper Corp., and Fred V. Doutt, superintendent, Champion Paper & Fibre Co., Canton, N. C., co-chairmen of the local committee.

All requests for hotel reservations should be sent direct to Lee M. Bauer, production manager, Ecusta Paper Corp., Pisgah Forest, N. C. Reservations for this convention will not be accepted by the hotels

Lesavoy Tells PULP & PAPER Industry of Plans for Mills in Sweden and U. S.

Paper Corp. of America is by no means the biggest pulp and paper empire in North America, nor even one of the biggest. But certainly it is one of the most talked about, certainly it shows signs of growing larger, and some of its recent moves may have far-reaching effect on the industry.

Its latest move, announced in the March PULP & PAPER Industry, was the purchase of stock of the pulp mill company at Hjarpen, Sweden, from the Tegefors' interests of Norway. This is the first Swedish mill in history to become American owned. On that basis alone, Paper Corp. of America is worth study.

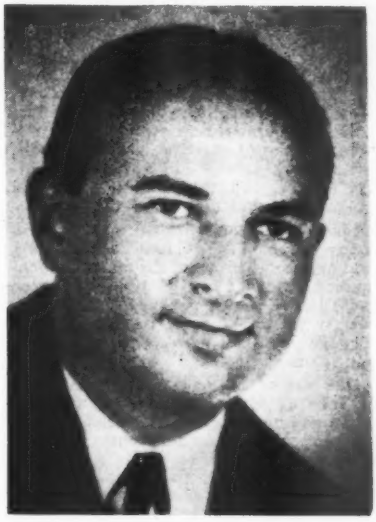
The reason for the purchase of the Swedish mill illustrates what is perhaps the leading characteristic of Paper Corp.'s president—I. Lawrence Lesavoy. He needed pulp. He could not get pulp. He found no U. S. pulp mill for sale. So he went to Sweden to a source which has been a question mark for years and which has kept U. S. pulp consumers puzzled and unsettled for a long time. Today, out of all U. S. users of foreign pulp, Mr. Lesavoy and his associates are the ones who know most surely where their Swedish pulp will come from, how much it will cost, and in what quantity it will arrive.

The purchase of the Swedish mill also reflects Mr. Lesavoy's self-taught training in law (he has a degree). Since 1916 there has been a law in Sweden which prevents the sale of a factory to foreign interests. But the law does not apply to mills which were already foreign-owned prior to 1916. Tegefors was such a mill.

Mr. Lesavoy's entrance into the pulp and paper industry came about in 1944 because he needed paper for Cuba distribution. Like many another, he was informed that no paper was available for his purposes. Immediately he began looking around for a paper mill to purchase.

On the 68th floor of New York's Empire State Building, where Mr. Lesavoy has headquarters, are the offices of Industrial Klabin which operates a mill in South America. Edward Levin, New York representative for Klabin, and friend of Mr. Lesavoy, knew of a mill which might be purchased. It was the old North

I. LAWRENCE LESAVOY, President, Paper Corp. of America, Empire State Bldg., New York City: "Russia is losing no time in developing resources and will soon be our greatest rival in foreign trade."



MURRAY LANDY, Treasurer and Chairman of Executive Committee of Paper Corp. of America, whose association with Lesavoys dates back to textile business in Allentown, Pa.

American Pulp & Paper Co. at Cheboygan, Mich., once owned by Union Bag & Paper Corp., then by Simplicity Patterns as a source for its paper dress-patterns, and later by a prominent paper machinery manufacturer. A three-year lease, with option to buy, was arranged. Early this year Paper Corp. claimed to have exercised its option. Mr. Lesavoy asserts that output of the mill has been increased from 40 to 100 tons per day, the number of employes from 100 to 200.

Within a month Paper Corp. had made another move. It purchased the mill of Amoskeag Paper Mills Co. at Manchester, N. H., at present turning out 30 tons daily. The price involved in the purchase of any of the three mills is not available, but one observer places the amount involved in all three transactions at "between $8,000,000 and $10,000,000."

Communities Rehabilitated

Mr. Lesavoy takes pride in the fact that the purchase of the mills has rehabilitated entire communities. It is said that the Cheboygan mill was about to be dismantled for removal to another location. The town's 6,000 citizens were worried, and naturally regard the entrance of Paper Corp. as a saving miracle. The Manchester mill had been closed for some time. Its reopening was a big day for the town's 78,000 people even though the mill is relatively small. There seems to be every indication, too, that Paper Corp. may have prevented the village of Hjarpen from becoming a ghost town. Nearly the whole hamlet is the property of the mill. Ownership includes 75,000 acres of land including farms, lakes, streams and extensive timber limits. Fifteen hundred people live on the premises.

It becomes natural to think and speak of I. Lawrence Lesavoy in writing of Paper Corp. of America, although he has several associates. Most important of the latter is an old friend, Murray Landy, treasurer and the board chairman of Paper Corp. Mr. Landy's association with Mr. Lesavoy dates back to a textile business in Allentown, Pa., and Mr. Landy also controls a large towel service business. Other companies headed by Mr. Lesavoy include Rayon Corp. of America, Blossom Corp. and Lesavoy Associates. The companies are closely held by six Lesavoy brothers, Mr. Landy and Mrs. I. Lawrence Lesavoy.

The latest company to be formed, in connection with the Swedish purchase, is Swedish-American Pulp

Co. Robert LeRoy, in charge of the pulp and paper division of Paper Corp., is an official of the new pulp company. Mr. LeRoy, well known in the industry on both the east and west coasts, was formerly with Rayoiner Incorporated. He has been elected executive vice president and a director of Paper Corp.

Robert C. "Budge" Clark has been elected vice president in charge of sales.

Robert J. Knowles, resident manager of the Michigan and New Hampshire Mills, was formerly with Nekoosa Edwards and Eastern Corp.

Myron F. Flotow is assistant manager at Cheboygan, Mich. He was with Allied and French Paper Co. formerly.

Another company formed by Mr. Lesavoy and associates is Lesavoy International, a world trading company with many branch offices and soon expected to have a connection in every principal European country as well as in the Middle East. Even during the war Mr. Lesavoy was opening offices in several Latin American countries. His executive vice president, Col. Alfred Schultz, is in South America now, opening additional offices. There is no question but what Mr. Lesavoy believes in world trade, and, moreover, intends to have a part in it.

"We must have the wheels of commerce turning if we are going to have peace," he told PULP & PAPER. "Business men are the greatest ambassadors of peace."

Mr. Lesavoy has made it a point to know as much as he can about Russia, and it is said that he knows more than most about the country of his birth. Says he: "I am convinced that the Russian pulp and paper industry is recovering from war at a much faster pace than is realized. Russia has the greatest pulp resources in the world today and, believe me, she is losing no time in developing them." He believes that Russia will be our greatest rival for world trade, and sooner than we think. "Already she is supplying neighbor countries, like Yugoslavia, with practically all needs. Right now she is reaching into South American markets. We simply must be more export-minded in America or we will lose our world markets."

Interests Are Varied

A naturalized citizen, Mr. Lesavoy is 42 and his rise is a typical old-fashioned American Success story with overtones. A few months after arriving in the U. S. he mastered English sufficiently to become a salesman. Soon he had saved enough to buy a sewing machine, set himself up as a "manufacturer" in the

ROBERT W. LeROY, formerly with Rayonier, now Executive Vice President, Gen. Mgr., and Director of Paper Corp. of America and in charge of pulp and paper operations of Lesavoy interests. He told PULP & PAPER that extensive improvements are being made at Cheboygan, Mich., mill.

corner of a Philadelphia loft. Soon there were two machines, then four. Quite accidentally, he says, he discovered and patented the bias cut of viburcater garments and "was on the way." As it did to many another young man, the depression finally brought Mr. Lesavoy to a dead stop; the campany he had created went through bankruptcy. But Mr. Lesavoy resurrected his old sample case, went to selling again. In two years he had built Blossom Products Corp. Now it is one of the largest manufacturers of knit underwear and sportswear in the U. S. Officials of Blossom are reticent about details of their financial set-up, but they claim "a million dollar rating of first credit."

Mr. Lesavoy and his associates are in many things besides textiles and pulp and paper. Through his international trading, a shipment of pulp or paper may have been translated from Australian wool. The wool may trace back through Brazilian coffee, Italian engines and Cuban sugar.

Old timers in pulp and paper look askance at the injection of other commodities into the industry, but Mr. Lesavoy is openly impatient with tradition in almost every phase of his operations. His answer is that the whole industry will profit from a broader outlook, quicker and more direct action—as exemplified in his purchase of the Hjarpen mill. On the other hand, not every pulp and paper executive is critical of Mr. Lesavoy.

Like many self-made men, Lesavoy has a strong sense of the dramatic. It is exemplified in his almost palatial offices in the Empire State Building. They were, of course, first conceived as a background for his textile headquarters, and textiles require more attention to *decor* than pulp and paper. Mr. Lesavoy's tasteful private office is a small law library, and his international friendships are exemplified in a signed photograph of Albert Einstein.

Some persist in attaching a mystery to Mr. Lesavoy. The mystery is more apparent than real. He is a young man of unusual intelligence and energy who has worked hard and is still at it. From his early days in Russia and from the depression he learned some things the hard way. He can exercise pleasantness and charm, and he can also drive a bargain in the clinches. In these things it does not seem to him that he differs from many of his contemporaries.

"I like the paper industry", he told PULP & PAPER. "I know a new man in an old industry is a target. I don't want to be a target. I want to make and sell pulp and paper, and I intend to work at it."

Mill Improvements

When Paper Corp. took over the operation of the Cheboygan mill in 1944 it was in the marginal mill class. The smaller paper machine was started up early in 1945 and in August of the same year the large machine was put into operation.

During the past two years the company has been faced with the same operating difficulties as the rest of the paper industry—short supply of vital raw materials such as pulp, chemicals and coal. But in addition, the location of the mill in the extreme northern part of Michigan presented a great problem of transportation of these supplies.

When Paper Corp. acquired Amoskeag, one machine was in commission, carrying on at about five tons per day. Mr. LeRoy has been concentrating on this plant for the past few months and has stepped this machine up to ten tons per day. In the meantime an 88-inch Fourdrinier is being rehabilitated. All stock preparation machinery and stock tanks and refining equipment has been put into operation. It is said that $60,000 has been spent in modernizing the plant and the second machine went into operation in May. A complete finishing department is also being installed. It is believed the output can be boosted to 30 tons per day.

Chief objective is to make the mill a leading producer of fine writing and printing papers. To this end it has installed about $200,000 in equipment and within the next few months expects delivery of additional machinery including Vortraps, Bird Dirtecs, Bird screens, five E. D. Jones Hi-Speed Refiners, dirt removers, and new trimmers. The beater room has been completely rebuilt. There have been extensive repairs to boilers and related equipment, modernization of existing power plant facilities and de-inking plant and the purchase of an automatic hoist truck and electric lift trucks. The machine shop is now equipped to handle almost every type of machinery repair and servicing.

Shortage of electric power has at times curtailed the operation of the plant and the company has decided to build its own modern power plant to be completed within one year. The company also intends to enter the converting field at Cheboygan.

The Tegefors plant has a daily output of 100 tons of high quality sulfite pulp. It is one of the most strategically located pulp mills in Sweden. It is near the Norwegian border, not far from Trondheim. Both Swedish and Norwegian ports are easily available for shipping. But more important, it is far away from all other pulp mills and while the Lesavoy holdings are only 75,000 acres, there are about 400,000 acres of timber limits in the

area where wood can be bought and 90% of its logs can be floated in by water. The mill chain-barks its logs at the mill. Bark supplies the mill with two-thirds of its fuel requirements. In addition there is a large alcohol plant. Christian Kaijser, superintendent, has been visiting in the U. S.

Stewart E Seaman, pulp and paper concultant, has surveyed the mill and made recommendations for improvements and increased output, among them a saveall installation. Larger filters will be installed and new machinery added to recover the alcohol plant effluient.

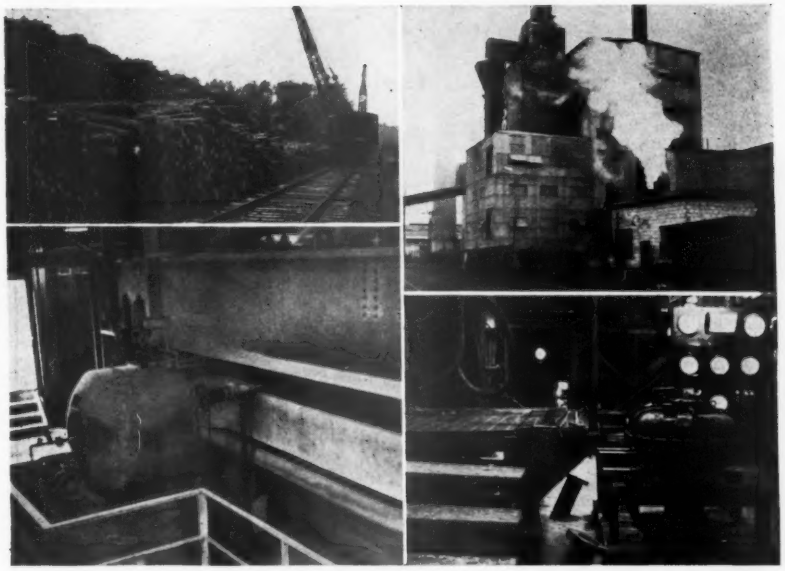
The Tegefors mill is developing means to cope with the wood shortage. Up to the present spruce has been used exclusively but a number of "cooks" have been made of birch with the bark left on. The result is said to be a good, high-grade, clean pulp. Tegefors is producing number one high-grade bleached sulfite pulp for paper. It is also equipped to produce a pulp suitable even by North American standards for the manufacture of rayon.

At the Hjarpen mill wood is brought by conveyor to the steam room where bark is softened for the chain barker by steam and hot water. Bark is subjected to three separate pressings to remove moisture before being sent to the fuel storage. Standard type chippers are employed and standard flat screens used exclusively. Bleaching is a three-stage process with a final Bellemers.

The Hjarpen mill was built by a Scottish engineer, James Beveridge, in 1894, and at that time was the only sodium bisulfite mill in the world, according to Mr. Seaman.

What will Mr. Lesavoy's next move be in the industry? He told PULP & PAPER that if he finds expansion necessary, it is likely to be in purchase of one other U. S. paper mill on the Atlantic seaboard, and possibly another pulp operation in Sweeden or Germany.

New B & W Boiler and Precipitator Are Installed at Alabama Mill



NEW VIEWS AT GULF STATES mill, Tuscaloosa, Ala.:

Upper left: A new American Hoist & Derrick Co. diesel locomotive crane facilitates unloading of pulpwood from railroad cars and performs other heavy chores.

Upper right: New Babcock & Wilcox recovery boiler is in left section of this power plant. Cottrell precipitator partly obscured on left.

Lower left: A drum head and suspending girder for the B & W boiler.
Lower right: Operating floor for B & W boiler. Falk gear for dissolving tank in foreground and beyond is instrument board.

EXPANSION AT TUSCALOOSA MILL

Suspended B & W Boiler and Cottrell Precipitator Provide Increased Efficiency and Savings for Gulf Corp.

Modernization of a mill built in 1928 and expansion of plant capacity from present 200 to 350 tons per day is being accomplished by Gulf States Paper Corp. at Tuscaloosa, Ala. Expansion extends also to the converting division. The current improvement program is referred to as resumption of a program halted by the war.

One of the first major completions in the improvement program has been the joint installation of a Cottrell precipitator and a new Babcock & Wilcox recovery boiler. This involved the erection of housing for the equipment.

The Cottrell precipitator has been in operation for several months with an accumulation of quite satisfactory experience. Mill superintendents and other executives from various Southern operations have visited Tuscaloosa to observe this installation, which the company credits with a saving of not less than one-third previous salt cake loss.

The new Babcock & Wilcox boiler also has proven satisfactory, producing 2½ million pounds of steam in 24 hours. This boiler is suspended from steel framing, the uprights of which are 85 feet high. Light and ventilation are augmented by having grating floors throughout. Suspension of the boiler sections permits expansion and contraction.

Removal of the original recovery boilers built when the plant was erected in 1928 is being effected. The Gulf States Paper Corp., then the E-Z Opener Bag Co., was a leader in the South in the burning of black liquor. At the Braithwaite (La.) mill in 1925, the burning of black liquor was tried in a regular rotary type boiler, but some difficulty was experienced. "Judge" W. M. Cary suggested spraying the liquor in, which proved successful and doubled the boiler's capacity. The Wagner patent method was being tried at the same time in a Monroe, La., mill. An article on the subject of black liquor burning, originating with a northern mill executive, had appeared in an industry publication some years earlier. Application of technical knowledge and experience during the past 20 years has advanced this equipment materially since those days.

Expansion of electric power equipment was effected in 1946 through addition of a 7500 KW turbo electric generator, bringing total capacity to 17,500 KW.

Other installations in progress include an additional Goslin-Birmingham quintuple effect evaporator; Dorr causticizing equipment; and a new 176-inch (trim 156-inch) Beloit

fourdrinier paper machine, which will take its place among the South's fastest.

Already operating in the yard is a modern diesel American Hoist & Derrick Co. crane which unloads pulpwood from railroad cars and performs other similar services.

Superintendents May Win $3,250 in Prizes

"My Plan for Improving the Safety Record in the Pulp and Paper Industry" is the title under which this year's papers are to be written for $3,250 in cash prizes, in the annual contest sponsored by the Superintendents' Association. First prize is to be $1000, second prize $750, and third prize $500. In addition there will be ten prizes of $100 each.

Manuscripts for the contest should be not more than 1500 words, typed on one side, double-spaced. Entries must be postmarked before Oct. 1, 1947. First page should give name, address, and title of article only; second page should repeat title, without name of contestant, and begin the article. Pages sent to the judges show only a code number so that identity cannot enter into the decisions.

Entries should be mailed to G. W. Craigie, American Pulp and Paper Mill Superintendents' Association, Inc., 220 East 42nd St., New York 17.

Joins Sidney's Board

A. H. Williamson, Vancouver financial man who during the war served as Canada's Timber Controller, has joined the board of directors of Sidney Roofing & Paper Co., Victoria. He is also a director of Powell River Co.

VIEW OF THE TUSCALOOSA MILL. Power building with Cottrell precipitator rising behind it are at left of group of buildings. Chicago Bridge & Iron Co. supplied tanks at right which are being installed in connection with Dorr causticizing installation.

Another Pulp Board Mill Projected in Far West

In order to increase the valtue of sawmill and plywood plant by-products, now sold as pulp chips or for fuel, H. R. MacMillan Export Co., Ltd., one of the biggest timber operators and owners in Western Canada, intends to build, as soon as possible, in the Vancouver, B. C., area a plant to convert these by-products to soft board and hard board for building purposes.

It will be the first Canadian factory of its kind West of Ontario and Quebec.

Cost will run between $2,000,000 and $3,000,000.

Capacity of the pulp board mill will be from 75 to 100 tons daily. It will give permanent employment to about 100 persons.

Decision to build the mill has been made on the basis of recommendations made by experts of international reputation who were employed to advise as to the highest value use of the company's by-products.

While no announcement has been made as to the specific location of the plant, it is expected that it will be on the Fraser River about midway between Vancouver and Westminster, as some of the MacMillan mills are situated there—Canadian White Pine Co., which manufacturers lumber, and MacMillan Industries, Ltd., a plywood manufacturing plant. A system of conveyors will be installed to transport material from the two existing mills to the new plant for conversion.

Clifford Crispin is by-products manager for both companies.

THE PLAQUE IN THIS PICTURE marks the location of the world's first service station, opened in Seattle, Wash., on June 5, 1907. It was unveiled by MILLER FREEMAN (right), publisher of PULP & PAPER Industry and other industrial journals. Mr. Freeman, a publisher for over half a century, was invited by Standard Oil Company of California to represent Pacific Northwest pioneers at the ceremony. S. E. STRETTON (left), district manager of the company, presided. Unveiling was at station site at East Marginal Way and Holgate St., now in important industrial section of Seattle.

Canadian Officials of Industry At Meeting

Several prominent figures in the pulp and paper industry of eastern Canada were in Vancouver, B. C., during the annual sessions there of the Canadian Paper Trades Association.

Among them were E. Howard Smith of the Howard Smith Paper Mills; George C. Winlow and N. B. A. Fair of the E. B. Eddy Co.; A. E. Cadman, former general manager of the Canadian Pulp and Paper Association; F. L. Mitchell, general manager of the Canadian Pulp and Paper Association.

CROWN ZELLERBACH DIRECTOR OF RESEARCH
New Program Includes Expansion of Facilities

WILLIAM R. BARBER, Crown Zellerbach Corp.'s Technical Director: "Our plans are not only pointed to increased and improved paper products but to concurrent expansion of our research personnel and facilities."

Dr. Wendell W. Moyer, formerly for ten years director of research at the A. E. Staley Mfg. Co., has accepted the appointment of director of research of the Crown Zellerbach Corp. and has entered upon his new duties at Camas, Wash., it is announced by William R. Barber, director of the Central Technical Department.

"Our post war plans are not only pointed to increased and improved paper products manufacturing," said Mr. Barber, "but equally stress a concurrent expansion of our research personnel and facilities. For some time it had become apparent that our growing research interests were requiring a greater specilization of attention than our organization of technical directorship alone endowed.

"The appointment of Dr. Moyer to the new position of director of research is a step in our program, in line with the recent announcements by President J. D. Zellerbach and Vice President Frank N. Youngman to that effect," said Mr. Barber. "It is much to our pleasure, and we are sure it will become also to the industry generally in the Pacific Northwest upon acquaintance with him, that we were successful in inducing a man of the high quality of scientific training and research attainments as Dr. Moyer to come with us."

Dr. Moyer, born in Glidden, Iowa, 44 years ago, received his B.S. degree at Findlay College, Iowa, his A.B. and M.S. degrees at the University of Illinois. His degree of Doctor of Philosophy in organic chemistry was gained also from University of Illinois in 1929, after which he held a post-doctorate position as a teaching assistant at Harvard.

He spent 1930 and 1931 at the University of Munich, Germany, after winning a National Research Council Fellowship. Returning he became research associate and instructor in chemistry at Princeton University.

His principal industrial recearch positions have been with Solvay Process Co., at Syracuse, N. Y., from 1935 to 1937 and from 1937 until his recent association with Crown Zellerbach, he was director of research for the A. E. Staley Mfg. Co., Decatur, Ill., manufacturers of products derived from corn and soya bean.

Mr. Moyer is a member of Sigma Xi and Phi Lambda Upsilon, honorary science and chemistry societies, respectively. He is at present national chairman of the Division of Sugar Chemistry and Technology of the American Chemical Society. Dr. and Mrs. Moyer and their five children have settled in their new home on the Lacamas Lake Road, just outside of the city limits of Camas.

Smith Vice President Of B-D Export Firm

Appointment of Frank W. Smith as vice president of Bulkley, Dunton Paper Co., S. A., the paper export unit of the Bulkley, Dunton organization was announced by George G. Cobean, president.

Mr. Smith was connected with the National Paper and Type Co. for 34 years and has travelled extensively in Latin America and Europe.

Bachman of Riegel Retires

Paul R. Bachman, vice president of Riegel Paper Corp., and former sales manager, retired on July 1 after 47 years with the company and its predecessor, Warren Manuf. He will remain on the board of directors.

97-Year Old Papermaker

William H. Goodenough, who was 97, and who came with Crown Willamette mill at Camas, Wash., in 1915 as a tissue specialty expert and continued as paper machines superintendent until 1919, died early in July. For past several years he has made his home at Hood River, Ore.

DR. WENDELL W. MOYER, newly appointed Director of Research for Crown Zellerbach Corp. His headquarters will be in Camas, Wash., at the expanding Central Technical Department headed by W. R. Barber.

New Pulp Production For Weyerhaeuser Tbr. Co.

Principal parts of the 156-inch Rice Barton machine for Weyerhaeuser Timber Co.'s new bleached kraft pulp mill has been delivered at Longview, Wash., and is being set up and the B. & W. boilers have also arrived. Five digesters and liquor tanks from Chicago Bridge & Iron Co. already have been installed.

This new mill will begin producing the first of the year at the rate of 200 tons per day. A six-stage bleach plant will process the pulp.

Meanwhile, the Pulp Division of Weyerhaeuser Timber Co. is giving preliminary consideration to further construction of new facilities for manufacture of dissolving grades of sulfits pulp.

Canadians on Visit

Fred Erler, superintendent, and Clarence Taylor, assistant superintendent, both of Westminster Paper Co., Ltd., New Westminster, B. C., visited the Crown Zellerbach Corp., Camas, Wash., mill July 11 and 12.

New Refiner Booklet

An attractive and comprehensive booklet on the Sutherland Single Rotating Disc Refiner is available on request to Sutherland Refiner Co., 1104 Broad St. Bank Bldg., Trenton N. J. It includes a sectional drawing of the refiner on an openout page and installation layouts of a single refiner and of six refiners on another open-out page.

VIEW OF AUSTRALIAN NEWSPRINT MILLS LTD., which will add another newsprint machine and kraft mill equipment. At right—L. R. BENJAMIN, General Superintendent, now touring North America to select machinery. He is a pioneer of the Australian pulp and paper industry.

Australians Here Studying Processes And Equipment for New Kraft Mill

Primarily with a view to achieving better wood utilization, Austrailian Newsprint Mills, Pty., Ltd., plan to establish a 100-ton kraft mill at Boyer, Tasmania, according to L. R. Benjamin, general superintendent, who is spending some time in the United States and Canada this summer.

The 20,000 tons, or more, of bleached kraft pulp to be produced at this mill will be combined with six or eight thousand tons of long fiber pulp imported from British Columbia and native groundwood pulp to the extent of about 60,000 tons. This combination is designed to make it possible to use Australian species.

Mr. Benjamin, accompanied by T. A. Carey, chief engineer of the same company, told PULP & PAPER that before the kraft mill's construction is undertaken his company will install a 246-inch newsprint machine with a speed of about 1500 feet per minute. Choice of type and manufacture has not yet been made. The new machine will supplement a 172-inch Walmsley machine with a speed of 1200 feet per minute.

Australian Newsprint Mills olso contemplates installation of ring-type grinders to replace a series of Great Northern grinders now in use, and Mr. Benjamin watched these units in operation at the Ontario Paper Co., Thorold, Ont.

Because of disruption in shipping services, the Australians crossed the Pacific by steamship but made their first landing at Boston. After a few days in the eastern states and at Thorold they went to Montreal and Baie Comeau, where they saw Quebec North Shore Paper Co.'s modern newsprint mill.

Then they came to the west coast, conferred with pulp and paper men in British Columbia and down the Coast. Mr. Carey planned to leave San Francisco for home in September, but before Mr. Benjamin returns to Australia he will visit the United Kingdom and Sweden.

New Board Mill Planned in California

Articles of incorporation have been filed and accepted in California for incorporation of "Paperboard Company," for manufacture of paperboard. The place of business is San Bernardino, Calif., where an option has been purchased for a paperboard mill.

Incorporators are E. E. Flood, Everett E. Flood and T. J. Kennedy, of Pacific Paperboard Co., Longview, Wash.

Farnes & Martig Represent Fischer & Porter Flowrators

Farnes & Martig, Inc., 417 Northeast Couch St., Portland, 14, Ore., has been appointed exclusive distributors for Fischer & Porter Flowrators in the Pacific Northwest.

An article by Eugene R. Klotz, Oakland, Calif., Pacific Coast manager for Fischer & Porter, was published on page 37 of the April issue of PULP & PAPER describing how the Flowrator (or Rotameter flowmeter) is able to operate on pressures up to 6,000 psi. and flows up to 15,000 gpm., and the varied uses of the instrument. It is adaptable for indicating, controlling, integrating or recording a wide range of fluids, gases, steam, air, etc. of varied density, temperatures or pressures.

Mr. Martig, who was with Brown Instrument Co. for a decade, and Mr. Farnes, for 21 years a representative of Minneapolis-Honeywell, both on the Pacific Coast, joined hands in organizing their company a year ago.

Ray LeRiche at 422 Smith Tower, Seattle, Wash., represents them in that city. He is also a veteran of the Honeywell-Brown organization.

Australian "TAPPI" Established

Godfrey W. Ellis of Australian Paper Manufacturers, Ltd., is the president of the newly formed Australian Pulp and Paper Industry Technical Association, which has already established a solid place for itself in the Antipodes.

G. H. Wiltshire, of the same company, is honorary secretary, and Dr. H. E. Dadswell, of the Division of Forest Products, C.S.I.R., is honorary-treasurer, with an executive committee comprising J. L. Somerville, Australian Newsprint Mills Pty., Ltd.; H. B. Somerset, Associated Pulp and Paper Millls, Ltd.; K. S. Bull, Associated Pulp and Paper Mills, Ltd.; R. B. Jeffreys, and O. O. Nadebaum, both of Australian Paper Manufacturers, Ltd.

Temporary business address of the association is care Division of Forest Products, Council for Scientific and Industrial Research, Post Office Box 18, South Melbourne.

Board Machine Installed at Pacific Paperboard; Moore & White Designs 100-Ton News Machine

The $2,000,000 expansion program of Pacific Paperboard Co., Longview, Wash., is well under way, with Number 4 machine already installed and expected to start production of 16 point test liner early in August. This machine came from Merrimac Paper Co., Lawrence, Mass., and has 24-hour capacity of 30 tons on 9 point liner. Newsprint and other light specialties may also be produced on No. 4.

This is a Fourdrinier machine with 90-inch by 50-ft. wires, Sandusky suction couch of approximately 15-inch diameter, and two presses in the press section—rubber and brass coated. The smoothing presses include 38-36-inch diameter felt-equipped Bagley & Sewall dryers.

Two stacks are provided for calendering, a 9-roll and 7-roll. Other equipment includes a 2-drum upright reel, 2 Jordans, and a 2-drum winder and slitter. Screens and winders are driven by individual motors. A 260 h.p. turbine is directly connected with a D.C. generator, with back pressure steam from the turbine being used for drying the paper.

This machine was purchased by the Owens-Illinois Glass Co. of Toledo, Ohio, and Pacific Paperboard Co. furnished the material used for containers by the Owens-Illinois plant at Oakland, Calif.

New Newsprint Machine

The major item in the company's mill expansion program is a 160-inch, 100-ton per day Moore & White Co. newsprint machine which is scheduled to go into production in a couple of years. This $950,000 machine is, according to E. E. Flood, president, being purchased by a group of Western newspapers, most of which operate in California, which have contracted for the output of the machine.

Conrad J. Kern, chairman of the board, The Moore & White Co., of Philadelphia, Pa., was recently at Longview in the capacity of consulting engineer for Pacific Paperboard.

This newsprint machine, according to Mr. Kern, uses a 160-inch wire, 90 ft. long, and has a 36-inch diameter suction couch roll; flat suction boxes of non-shaking, non-removable type, and rubber-covered table rolls. He said it is not necessary to remove the rolls or anything else to change wires on the machine.

CONRAD J. KERN (left) Chairman of the Board, The Moore & White Co., Philadelphia, Pa., who recently was in the Northwest as consulting engineer for Pacific Paperboard Company, working details for installation of 160-inch Moore & White newsprint machine. LES WHITE (right), Mechanical Engineer, Pacific Papperboard Company, Longview, Wash.

Top: Assistants to Control Director at Pacific Paperboard Co., Longview, Wn., Wallace White, left, and Art Niemi, right. Mr. White became Control Inspector, having previously been with Champion Paper & Fibre Co., Canton, N. C. He was with Champion 17 years and had done the same work for District of Columbia Paper Co.. D. C. Mr. Niemi has been with Pacific Paperboard for 7 years. Lower view: E. E. Flood, president of Pacific Paperboard Co., Longview, Wash., cutting the surprise birthday cake presented to him on his birthday, July 11, by office personnel and heads of the departments. David J. Flood, Chief Engineer, at left, and Everett E. Flood, Vice President, at right.

Designed operating speed is 1,200 feet per minute.

Among the pumps there will be a white water circulating pump providing 10,000 gallons of water per minute; two Nash suction pumps for the suction rolls, each driven by a 150 h.p. motor; another Nash, powered with 50 h.p. motor, will be provided for the flat boxes. All three Nash pumps are motor driven.

The machine will have two rubber-covered suction presses with 30-inch diameter suction rolls, using a Nash pump on each and individually powered with 75 h.p. motors. The top roll on the suction press is granite with an oscillating doctor. Broke will be removed by conveyors provided for that purpose. Both presses are equipped with felt and are rubber covered. Each felt is supplied with Bird's Vickery felt conditioner. The third press is of smoothing type with bronze-covered roll and oscillating doctor. All bearings on the machine are anti-friction type.

In the dryer section there are 52-60-inch diameter rolls for drying the paper. Three top and three bottom rolls are to be used as felt dryers. The felt-carriers, with 12½-inch diameter rolls, have automatic felt guides and stretchers. A rope carrier automatically carries the sheet through the section.

The calender stack has eight rolls with anti-friction bearings, a motor lift, and circulation lubrication system. The re-winder is a motor driven 2-drum machine with stand. There are three Bird screens on the machine equipped with Bird's Dirtec cleaning system.

Lynch Lumber Co. is in charge of obtaining and preparing wood and making pulp for Pacific Paperboard, including buying logs and short wood and operating the barkers and grinders. According to Florence M. Lynch, president of Lynch Lumber Co., and a director of Pacific Paperboard Co., since her organization took over operation of the grinder section a little over a year ago the daily ground-wood capacity has been increased from 40 tons to 125 tons. This is largely as result of increasing the grinders from one machine to five.

Other officers of Lynch Lumber Co. are David J. Flood, vice president, and Everett E. Flood, secretary, and key personnel includes Don Willmes, manager, and A. W. Rice, superintendent of the pulping division of this company.

Production PULPWOOD Forestry

"The most effective way to encourage the growing of trees is to develop profitable reasons for cutting them down."—(A. G. T. Moore, Southern Pine Assn. executive, in 1938).

MINNESOTA & ONTARIO PAPER CO. IMPROVES ITS WOODS OPERATIONS

The pulp, paper and insulating board mills of the Minnesota and Ontario Paper Co. at International Falls, Minn., and Kenora and Fort Frances, Ont., are undergoing an extensive modernization and improvement program. This program was inaugurated in 1945 with an authorization for expenditure of $10,300,000. The greatest share of this expenditure will be incurred by additions to and amprovements in present mill property.

This ambitious program of building and modernization can be justified only upon the grounds that a permanent and steady supply of pulpwood is assured within a reasonable distance of the manufacturing centers. The importance of protecting this life line to the industry is fully appreciated by top management and the responsibility for this protection has been vested in a staff of trained foresters. Substantial expenditures have been authorized for the modernization of logging equipment and the development of new and better mechanical wood production machinery.

The trend is toward more and more mechanization of Mando's woods operations. Communications have been greatly improved with the installation of F. M. Radio equipment, camp buildings and facilities are being modernized to an extent beyond the dreams of old time lumberjacks, and safety, health and recreational programs are being instituted.

Two experimental logging camps have been in operation this past season, one in Minnesota and one in Ontario, for the purpose of testing various types of mechanical logging equipment. A "pulpwood machine" was constructed at the International Falls machine shop in 1946 which is capable of handling tree length logs, cutting individual logs into pulpwood sticks in one operation. The machine is powered by a portable diesel engine and consists of seven individual continuous chain saws capable of producing eight pulpwood sticks from any log. The actual sawing is controlled by one man who operates the seven saws and log lifting arms.

DONALD D. DAVIS (left), President of Minnesota & Ontario Papepr Co., and R. W. ANDREWS (right), Vice President in Charge of Production.

Mr. Davis stresses importance of better wood use and husbandry of wood resources for M. & O. He was Vice Pres. of WPB in Washington for 2 years and prior to that was President of General Mills for 8 years.

Mr. Andrews, since college days at U. of Maine when he cruised timber, has been alert to importance of good forest management, now one of his responsibilities. He served in Hardy S. Ferguson firm, a "school of engineering" for many prominent men in this industry. He was engineer on Great Northern and International Paper Co. projects before becoming Chief Engineer in building of M. & O. mills.

Tree length logs are skidded from the woods to a log deck adjacent to the machine, this work being done with T-6 International crawler type tractors and accompanying Hyster arches. Up to three cords of wood can be skidded in a single load by raising the forward end of the logs slightly clear of the ground. Two sets of chokers are used with each arch unit, one set being used for skidding while a "choker setter" in the woods is placing the other set on logs for the next load. To further reduce the time required to yard the logs and organize a load it is planned to use a separate machine which will do nothing but bunch logs along strip roads and make up loads for the tractor arch units.

A crew of seven men is used to feed and operate the machine and pile the wood for loading, four men being used on the log deck, one man on the machine controls and two men piling wood for the jammer. Seven steel lifting arms are lowered, a singe log is rolled into position from the log deck and the machine operator raises the log by raising the arms. The log is thus lifted and forced against the chain saws, the sticks drop down onto a moving belt and are conveyed to a point at one end of the machine. Here the sticks are piled so a power jammer, using a pulpwood clam, can pick up a load. Next season it is planned to use a loader with a continuous belt, rather than the power jammer, so that the wood will move directly from the machine to the waiting trucks with a minimum of handling.

With an adequate supply of logs at all times allowing continuous operation of the machine, about 100 cords per day can be produced. Transportation of the "pulpwood machine" from one location to another was done by semi-truck on long hauls. In the woods, the machine was mounted on a wide-runnered sleigh for quick movement from one site to another. For short moves, the machine could be set up and operating within a period of two hours.

An entirely different type of mechanization was tested in the Canadian experimental camp. Here skidding was done in a similar manner, using tractors and arches, but felling was accomplished with two-man power saws. Several types of

POTENTIAL PAPER—At Kenora, Ont., thousands of cords of pulpwood lie in temporary storage in booms on Lake of the Woods during the summer movement from woods to the Ontario & Minnesota mill. As rapidly as they can be handled, booms of 8-foot sticks are towed to the eastern outlet nearby where they are flumed to the dam. From there they go by "V"-shaped flume to Rideout Bay.

saws were tried and one conclusion reached was that regardless of the type of saw, efficient felling is dependent upon trained machine operators. Tree length logs were yarded to a central landing where they were bucked into pulpwood sticks with hand operative power saws. The sticks were rolled from the deck to a conveyor chain which lifted the wood up an incline to a platform which was the truck to be loaded. A man on the platform then pulled the sticks from the chain and rolled them onto the waiting truck.

Varying terrain and timber conditions encountered in this section of the country will undobtedly necessitate ramifications or combinations of both methods to fit the situation. To be satisfactory, any method adopted must be sufficiently flexible to allow its use under any and all logging conditions.

In addition to mechanization and development of logging equipment, numerous additions and improvements have been made in the camps themselves. Proper intercamp and camp headquarters communications have always been a problem under conditions existing on extensive logging operations.

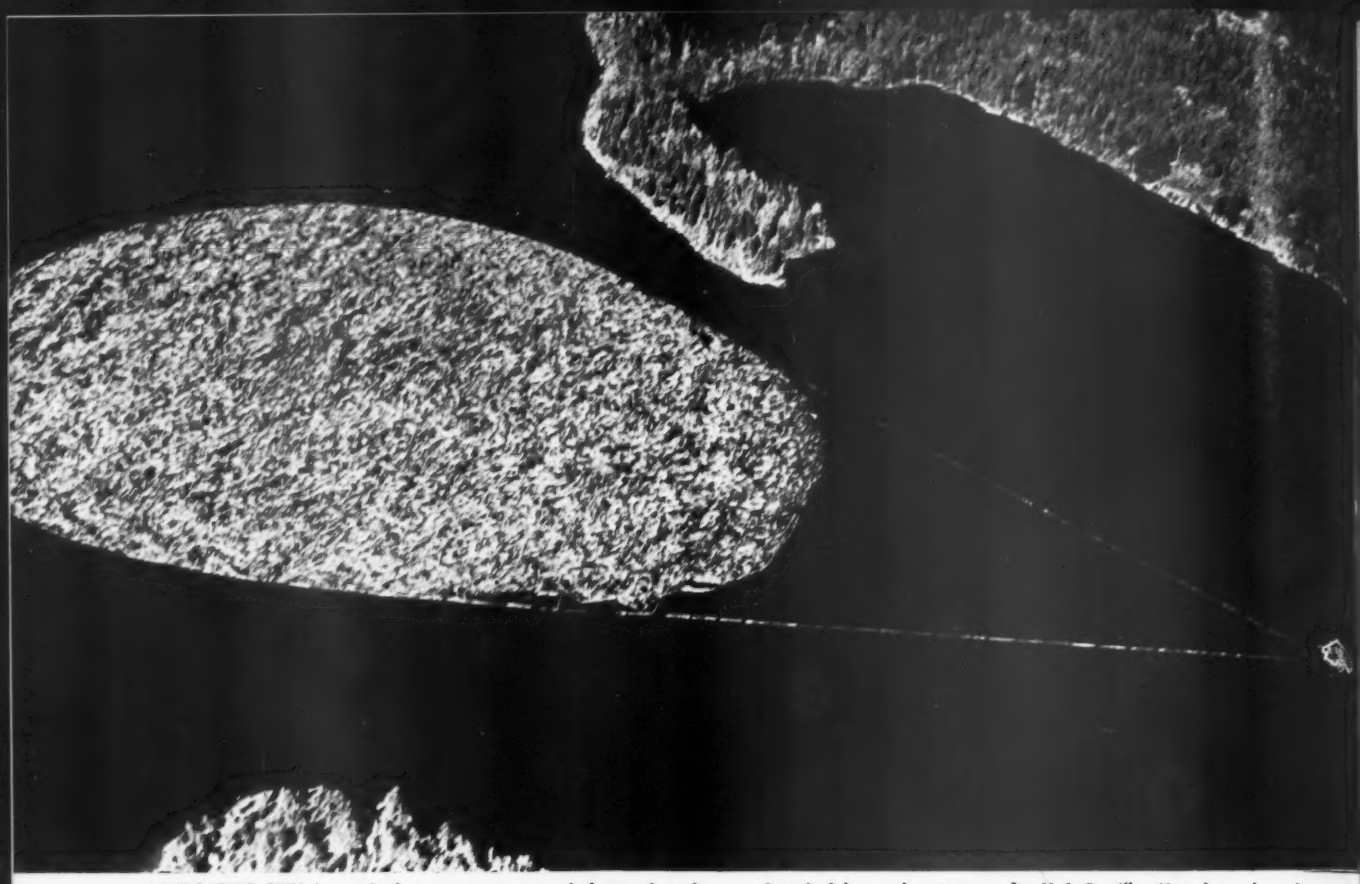
FM Radio

The Canadian Logging Division has found, in frequency modulation radio, an answer to their communications problem. Two key radio stations of 250 watts each, operating in the 30-40 megacycle, frequency modulation radio band have been erected at the mills at Fort Frances and Kenora, Ont. Radio waves of the frequencies being used have quasi optical properties, i.e., they travel only a short distance beyond the horizon. It was therefore necessary to construct 300 foot steel towers on which to mount the antennas in order to obtain communications over the desired distances. Both of these stations are completely remote controlled from the respective mill offices.

Approximately 60 miles to the east of the Fort Frances station at the headquarters camp in Flanders, Ont., a 60 watt portable station was erected with its antenna elevated on a 90-foot wooden mast. Surrounding the Flanders station, within a radius of about 30 miles are several logging camps, each equipped with a similar 60-watt portable radio station housed in a small taxi-size wardrobe trunk. Their antenna consists of the familiar collapsible, buggy whip-type common to automobile radios, and are clamped onto any convenient tree to secure the advantage of height.

Sixty miles east of the Kenora mill at the headquarters camp is erected another relay station with a 90-foot antenna similar to that

HERE IS REMOTE CONTROL equipment for FM radio communication, as described in this article, in the Fort. Frances, Ont., mill office of Ontario & Minnesota Paper Co., Canadian subsidiary of M & O PaperCo. Florence Dustak is the operator.



NAVIGATING SKILL is required to maneuver several thousand cords of pulpwood through the narrow waters in northern Minnesota and Ontario lakes and waterways for M & O mills. Note how close the shorelines are to this boom of logs as shown in this spectacular air view.

of Flanders. These relay stations may communicate directly with the main stations at the mills and relay any message to and from the surrounding logging camps.

The radio equipment is as simple and easy to operate as an ordinary telephone, and unskilled personnel become adept to its useage in a matter of minutes. A short training course for selected personnel of the company electric departments has proved successful in equipping them for routine maintenance and repair duties. While considerable seasonal variations in signal strength and in long distance skip interference have been noted, messages have rarely been delayed for more than a few minutes. Careful scheduling eliminates intra-network interference.

Plans have been made and construction will soon begin on a similar network to be installed with a main station to be located at Big Falls, Minn., and serve its surrounding camps. A separate frequency will be used for the Minnesota installation and any necessary communications across the international border with Canadian stations will be made possible by the use of additional duplex receivers.

"City Living"

In order to obtain loyal, steady intelligent and high caliber personnel for woods labor, the company has recognized that it must provide all the conveniences of "city living" in remote and isolated lumber camps.

A great deal has already been realized towards this end, what with an instituted program in model camps embodying improved construction, recreation halls, electric lights, running hot and cold water, shower baths, central laundry units and oil heated bunk houses. Newspapers, magazines, games and radios are provided for the men as well as weekly movies.

Sleeping quarters are pleasant and well ventilated. Each bed is provided with a comfortable mattress, feather pillows, pillow cases, flannelette sheets and wool blankets. The pillow cases and sheets are laundered and changed weekly.

Particular stress has been placed on improvement of mess facilities. The old saying, "An army marches on its stomach," could well be patterned to the company's woods operations. Well balanced, nutritious meals with a variety of salads, vegetables and meats are served family style in bright, clean mess halls by first class cooks. Kitchens are modern in every respect with propane gas or oil burning cook ranges, equipped with temperature controlled ovens. Standard equipment of each kitchen includes an electrically operated walk-in refrigerator, steel sinks, cupboards and miscellaneous labor saving equipment. A central warehouse and processing plant is being considered for establishment near the headquarters camp. Here, meat will be processed into cuts, breads and pasteries will be baked and delivered to each camp daily. This will allow the cooks to devote their full time to the preparation of "three squares" daily.

Forestry activities are carried on in both Minnesota and Canada. Detailed forest management plans are being prepared for an area of over five million acres in the two countries. In minnesota, an area tributary to International Falls, consisting of about 2,000,000 acres is the source of a large proportion of the pulpwood consumed by the Falls mill. This area has been divided into five management blocks with a forester in charge of each. Aerial photographs are being used to ex-

M & O DEVELOPE NEW TYPE OF PULPWOOD MACHINE.

Upper view: M. & O. Paper Co. machine shop at International Falls, Minn., produced this Pulpwood Machine which makes seven cuts simultaneously in a tree length log. The cut logs drop on an endless chain which carries them off to one side for transferring to truck or pile. Machine is diesel-powered.

Middle view: Continuous chain conveyor for loading pulpwood. This wood is trucked direct to plant or main storage yard.

Lower view: Closeup of Hyster logging arch or sulky which lifts butt ends of felled trees and hauls them to pulpwood machine or sawing platform.

pedite the work of obtaining timber inventories. Based on growth and volume, management plans are being prepared for each block establishing an allowable cut commensurate with the net growth of each area. This work is being done in cooperation with the Minnesota State Division of Forestry due to the large land holdings which they have in the area.

Careful control over logging operations, maintained to insure cutting in accordance with approved silviculture practices, together with large expenditures made for fire fighting equipment, is additional insurance that the wood supply upon which the industry is dependent will be kept in a high state of productivity.

Progress in the paper industry is dependent upon the willingness of the companies making up the industry to invest money in the development of new and better products and in increasing the efficiency of all phases of the operation. Insurance of a stable supply of raw materials is essential for without this no industry is justified in making large investments characteristic of a permanent operation. The Minnesota and Ontario Paper Co. is looking toward a strong future, and through its modernization and betterment program expects to be in a favorable position to supply its customers with the highest type of product for an indefinite period of time.

More Swedes Tour Woods of U. S.

Two Swedish foresters, Sven G. Ekman, Uddeholm, and C. G. Sjostedt, Norrkoping, representatives of two different pulp and lumber firms of Sweden, have been investigating U. S. woods operations methods and studying latest techniques in this country.

They report that Sweden is experiencing an era of prosperity with prices high for all basic materials. Recent quotations of pulpwood has been $30 per cord at the Swedish mills. Competition for pulpwood at the Swedish mills is very keen and a shortage of labor is reported.

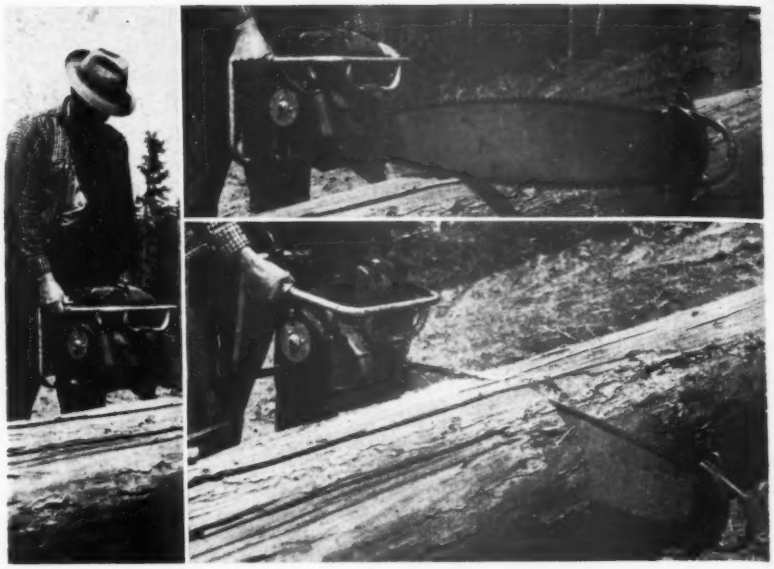
A Real Tree Farm Pioneers With New Equipment And New Forest Management Methods in West

One of the most successful and interesting "tree farming" operations on the continent is being carried on in northwestern Oregon. New types of equipment and new policies and methods in forest management are being developed. Strictly speaking and officially speaking, some of these are still "experimental" but for all practical purposes they have succeeded so well that they are really no longer experiments.

Following a trend particulary noticeable in the South and on the Pacific Coast, a large papermaking firm acquired the vast timberlands of a big lumber firm and has proceeded to put a new type of long-term forest management into actual practice.

In this case the new owner is Crown Zellerbach Corp. It re-christened the 50,000 acres of already logged-over lands it bought from Clark & Wilson Lumber Co. in April, 1945, "The Columbia Tree Farm." Just south of the Columbia River, these lands extend into Columbia and Washington counties. In just two years, the new owners have made that phrase "tree farm" really mean what it says!

Two kinds of operations were observed by PULP & PAPER on a tour through the area a few weeks ago and they are described in detail in this article:



THESE VIEWS show Superintendent Glen Hawkins of Columbia Tree Farm, Crown Zellerbach Corp., making first use of Reed-Prentice one-man Timber Hog on logs being salvaged. PULP & PAPER was on the spot the very moment the new power saw arrived and its "four horses" answered the need for enough power to go through logs up to 15 inches diameter without "killing" the motor.

1. A vast salvaging of tops, saplings and normal wood residue is netting up to 26 cords per acre for the big Crown diversified paper mill at Camas, Wash., up the Columbia River. More than 6,000,000 bd. ft., equivalent to about 12,000 cords, have been salvaged to date.

2 A. thinning-out operation of stands 40 to 50-year-old second growth Douglas fir which in that time have grown up to 15 inches in diameter, breast high (new kraft pulping and bleaching operations in the Far West have made it possible to use Douglas fir for pulp on an extensive scale for the first time, thus helping to balance and perpetuate the orthodox hemlock and spruce resources of the western industry).

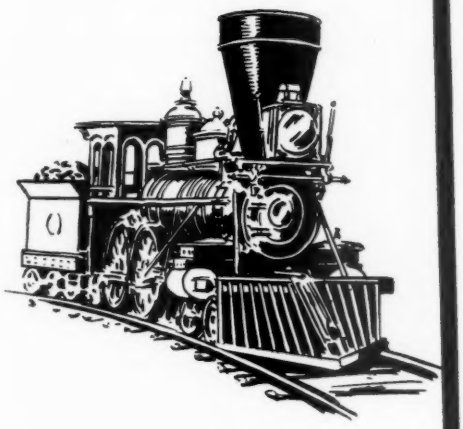
Objectives of salvage:

1. To reduce fire danger to a bare minimum.

2. To utilize raw material formerly uneconomic to recover and which

TOP PICTURE shows how thinnings are being made in a fine second growth Douglas Fir stand on Columbia Tree Farm, to open sky canopy, eliminate root competition and space out trees. Douglas Fir is now used extensively in pulp and the very low stumps show how all good wood is taken. Trees up to 15 in. diameter breast high, 40-50 years old, have been taken.

BELOW—A view of stacked salvaged wood.



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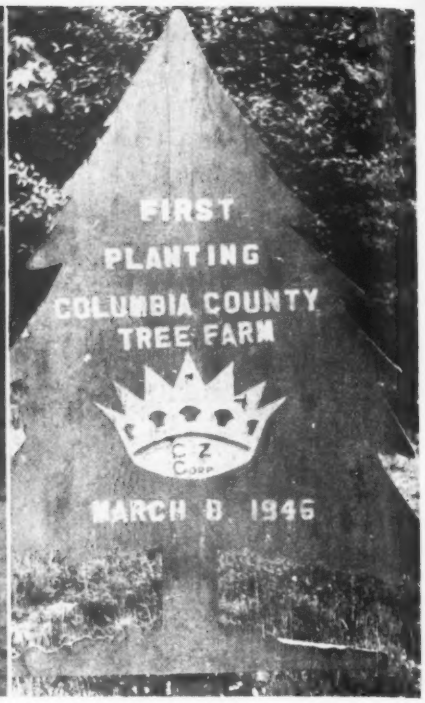

KOEHRING CRANE is loading salvage wood on trailer for Crown Zellerbach in picture at left. This indicates how big this wood is—wood called "small" in the West and uneconomic to use up to now. Loggers and pulp mills now are anxious to find suitable equipment to handle this type of wood.

Middle view shows close-up of the seal on the Acme steel strap. Three of these bands are placed around the truck or trailer loads. Two might do, but three are used because loads are dumped roughly over a slip into the Columbia River. A sealing tool affixes this seal over the two overlapping ends of the steel strap.

View on right tells its own story—a marker which says the first planting on the Columbia Tree Farm was on March 8, 1946, at this site, a year after paper firm acquired timberlands of lumber firm which went out of business after many years.

had not been so urgently needed by western industry.

3. To keep second growth timber coming along abundantly and rapidly.

Objectives of thinning:

1. Open sky canopy and so stimulate growth of remaining trees.

2. Eliminate root competition for same purpose.

3. Space trees for convenient future thinnings.

Immensely pleased with the success of new kinds of equipments and methods of operations, as well as with new general policies in management, the Crown Zellerbach organization will rapidly concede that conditions are highly favorable in that area for these accomplishments and may not be so favorable elsewhere.

By conditions we mean all kinds of factors—terrain, rate of growth, weather, and — not the least — the type of good Americans who live in that region. And not least important, by any means, was that the former owners, Clark & Wilson, had felled snags very cleanly, built good roads, did some restocking themselves and bequeathed to Crown Z some fine personnel, all of which helped to build up a good tree farm.

Logging Manager Ed Stamm and Chief Forester Clarence Richen, whose broad policies and planning have been carried out, will say—for example—that one of the smartest decisions their company made was to keep on some of the key local men who had previously directed operations in this area for Clark & Wilson.

For instance, Glen F. Hawkins, for 16 years with C & W, is the logging superintendent. He's a membor of the Veronia school board, knows almost every farmer in the countryside by his first name, and his kids, too. His heart and soul are in the job of perpetuating these lands as a source of wood supply for Crown Zellerbach and of income and livelihood for his neighbors. And so it is with other local citizens in the Columbia Tree Farm directive positions, and even the locally enlisted crews are imbued with the same enthusiasm.

Sixteen units are engaged in the salvage logging. These operations vary in methods — there are mostly Caterpillars and small tractors being used, including a new Trail-Beetle tractor developed by Western Gear Works. But a small donkey built up from an old tractor is used. And even horses are used, where feasible, including one highly intelligent animal who yards the fallen or knocked down timber by a keen understanding of all his master's directions, thus requiring a minimum of movement in heavy brush by the latter.

But the one or two places horses are used, it should be noted, merely emphasize the need in the Far West for development of the right kind of new light mechanical equipment for rough terrain to carry on this new type of salvage logging. As has often been pointed out in this magazine, the heavy, expensive equipment which has been used for many years in the big timber logging in the Far West is not economically or physically adaptable to this new re-logging activity in small or broken wood. Nor is some of the light equipment which has proved successful in the flat pine lands of the South. And, to be sure, there are not enough smart horses to do a job which is becoming rapidly a

That all-too-common slow-down of production, with resultant climbing costs and falling profits, often turns out to be related to an outmoded crane. To help correct such a situation, consider a new diesel-powered AMERICAN Locomotive Crane. When American Hoist engineers set out to build this crane, they did not redesign a steam crane but started anew "from scratch". Every part, from rails to boom tip, has been designed specifically to match and balance diesel power. There is nothing finer on the rails.

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Locomotive Crane

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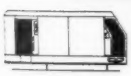
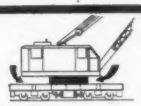

NO DANGEROUS SWINGING DOORS

ENCLOSED ROLLER-BEARING TURNTABLE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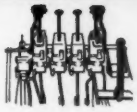
AIR POWERED ANTI-FATIGUE CONTROLS

great new branch of logging in the Far West.

The crews in the Columbia Tree Farm salvage operations are mostly independent units. Salvage contractors are paid on a cord basis delivered to nearest spur or logging road. The pulpwood is scaled via Sorensen cubic foot log rule and converted to cord measure.

Equipment Is Important

The key to making these operations economically sound is new, efficient equipment.

One of the answers for operations

PIONEERING IN SALVAGE WORK ON LOGGED-OVER LANDS, CROWN ZELLERBACH CORPORATION'S COLUMBIA TREE FARM AT VERNONIA, ORE. IS AN OPERATING EXAMPLE INDICATING JUST HOW PRACTICAL IT IS TO FOLLOW UP ORIGINAL LOGGING WITH A RE-LOGGING OPERATION USING LIGHT EQUIPMENT. 1. Carl Ernest is contracting for removal of down cedar logs from which power poles are the end product. Here are poles obtained from one ten-acre area which is expected to yield 300 poles 35 to 95 feet long. 2-4. Frank Reed, contractor, yards logs to a spur road with "Caterpillar" 20 tractor and parbuckles them onto piles with this same power unit after the logs have been bucked to length at landing. The piles of pulpwood logs shown here (including the pile at the right of which only a portion is shown) contains about 150 cords of solid wood. 3. One of the new Trail-Beetle tractors, made by Western Gear Works of Seattle, being tried out as a yarding unit for pulpwood logs. Crown obtained the unit primarily as a fire-protection vehicle and is here being operated by Clyde May of the protection personnel. 5. Pre-former, developed by Glen F. Hawkins (standing alongside unit), in which the small logs are to be placed to form a shapely bundle before binding with Acme metal bands and clips. After the logs are bundled the unit can be lifted right out of the pre-former with a power shovel, the same unit placing the logs into the frame, and can then either be loaded directly onto trucks for transportation or piled for subsequent loading. 6. Contractors Robert C. Wilfong and Don F. O'Brien (teamster) working up a pile of pulpwood logs ready for hauling. As shown here, the logs are yarded with a two-horse team.

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Left: Typical woods condition prior to re-logging. Right: An area which has been re-logged. Here 4.9 acres yielded 147 carloads of pulpwood.

similar to Columbia Tree Farm is probably a power saw of somewhat greater power than what seems to be the general run of saws on the market. For, in the Far West, this so-called "small wood" which is being salvaged isn't really small at all compared to average timber now being cut for pulpwood in other sections of the continent.

The salvage timber on Columbia Tree Farm averages 10 to 12 inches in diameter. On the very day that the Farm was visited by PULP & PAPER, the first of two new Reed-Prentice Corp. one-man Timber Hog power saws arrived from that Worcester, Mass., manufacturer and its first trials indicated strongly that it would greatly speed up the bucking of downed wood.

Heretofore, the power saws which happened to be tried out on this Tree Farm didn't have enough power and would "stall" in the middle of a log, or had other drawbacks. A larger 2-man Reed-Prentice Timber Hog had also been used, but the one-man Timber Hog for bucking (2 for falling) apparently was just what these operators wanted. Its 4-horsepower motor is "a lot of horse for a small saw," the users commented. They worked rapidly in bucking salvage wood of 6 to 15 inches diameter, but with very little taper and mostly averaging near the upper limit. Most of the salvage wood is cut to 8 to 16-inch lengths.

Of course, equipment for bucking and falling is only one of the problems facing the wood salvagers of the Far West.

At Columbia Tree Farm, the operators have found it practical to bundle all the salvaged and thinned wood with Acme steel straps. A picture with this article shows how the strap is fastened around the truck load of logs at the loading deck. The seal which fastens the two overlapping ends of the band is shown in the closeup and sealing tool does a quick job of making the load fast.

What would be called medium-sized trucks, in the logging West carry loads 35 miles to the Columbia River. Because at the river, the loads are dumped over a slip, it was decided to put three steel bands around each load. If a load was placed more gently into the water, the operator said, only two steel bands would be needed.

Wood for all purpose—lumber, fence posts, power poles, shingle cedar, shakes and hop poles—have been salvaged. But of course, most is pulpwood. In most operations, about a ratio of 10 to 1 logs go into pulpwood. As stated some 20 or more cords are salvaged for pulpwood per acre, with usually about 1,500 to 2,000 feet of sawtimber. The

Left to right: Merle Cline, woods foreman, and Frank Floeter, scaler, both of Crown's Columbia Tree Farm. Glen F. Hawkins, logging superintendent of Columbia Tree Farm, who is the "father" of the salvage re-logging program carried on since the "farm" became Crown - Zellerbach Corp. property.

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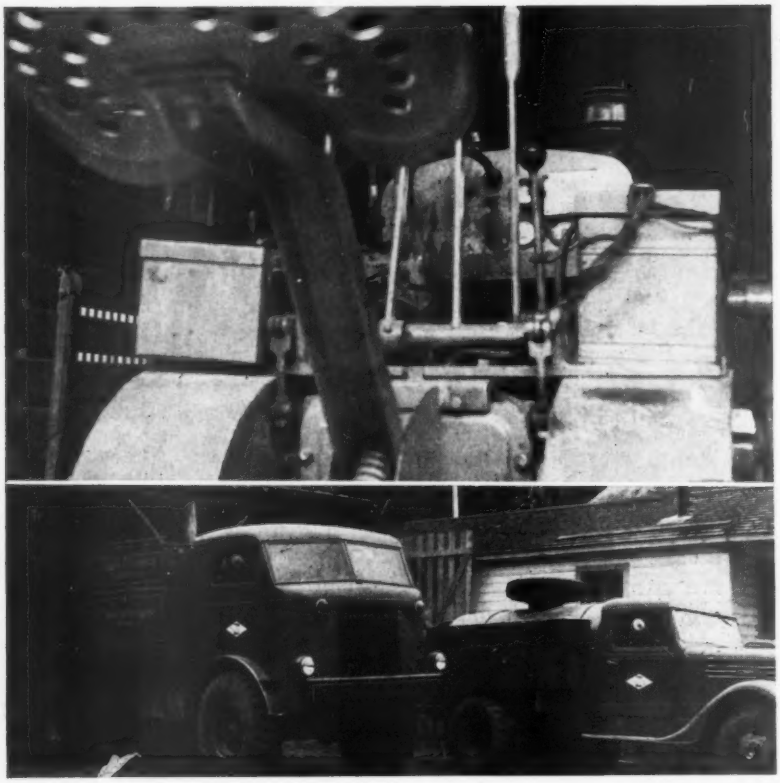

TOP—Closeup of driver's controls and seat in the little Western Gear Trail-Beetle tractor being tried out in yarding on Columbia Tree Farm. Here is one in a fire truck—the wall slats of truck can be seen on left side. It can be easily transported anywhere in this truck.

BELOW—At Vernonia, Ore., Tree Farm offices is the fire station—this big 4-wheel drive FWD truck on left was converted to fire truck and can carry a 50-man crew; 500 feet of inch hose on a live reel (useable while truck is moving); 1,500 feet of 1½-in. hose and 1200 gals. of water.

latter may be sold on the market and some goes to keep a local sawmill going. In these logging operations, the company is wisely alert to every possible means of taking good care of the future of the folks who live in this region.

One thoughtful move—an idea of Mr. Hawkins'—was the establishment of a picnic park in the timber area with running water, barbecue pit and picnic tables. It has been named Rogers Park as it happens to be on the site of the birthplace of Oregon's State Forester Nels Rogers. Important to the company? You bet it is, for as Mr. Hawkins anticipated, it keeps the picnicing neighbors on a location where any fires they build can be controlled, and minimizes the forest fire hazard.

One has to go into the thinning operations in the comparatively young Douglas fir forests to appreciate the fine-appearing stands of straight, uniform timber. Forty to 50 years old is young for this type of tree.

The operators concede they don't know whether they are taking too much or too little. The amount of thinning is indicated in an accompanying picture, but it is still pretty much on an experimental basis. White tags with red diamonds on them are used to mark the selected trees for thinning. Red paint around the diameter of a tree means that it is the boundary line of the thinning area.

In the salvage operations, the timber is mostly hemlock, the orthodox western pulp species, some fir and a little cedar.

Little Burning Now Necessary

Prior to 1945 all of the logged-over land was supposed to have been burned over as a slash disposal measure. Since Crown took over in '45 but little burning has been necessary and the fire hazard has been progressively decreased by removal of inflammable material — there was not a tree burned by accidental fires last year. To date most of the salvage cut has been in areas logged about three years previously, but some salvage has been carried on satisfactorily (economically) in areas logged 9 and 10 years previously. Mr. Hawkins told PULP & PAPER logs which have been down three years are generally sap stained, but not rotten. He finds it practical to remove logs for pulpwood which are 50% sound.

During the past winter and spring, pulpwood contractors have yarded and piled the logs along side the roads ready to be trucked to the Columbia River at Scappoose, where they are to be dumped, rafted, and towed up river to Crown's Camas, Wash., pulp and paper mill. The actual hauling was started the first of the summer, but in the meantime experimental operations are being conducted using a shovel for loading the logs and to assist in processes of bundling. At present a preformer has been developed by Hawkins. This is a mechanical frame in which about three logs are being placed to hold them into position for binding. Three such bundles can be expected to make up a load for flatbed trucks, and 6 to 8 bundles for a truck and trailer. Already work is under way to develop a mobile, power-driven pre-former, with tentative plans for providing one such unit for each pulpwood show.

Plans for Winter Operations

With arrival of fall months, contractors' operations will be moved back onto rock roads for winter production, with the older slash areas getting priority over fresh slash. In laying out settings, Hawkins takes into consideration the operator's equipment, the size and amount of wood to come out, the length of haul, and the slope over which it will be hauled. Horses and small tractors go out 350 to 400 feet on favorable slope, and larger tractors could be expected to yard as far as 500 feet.

Much attention is given to building an extensive network of roads throughout the 50,000-acre farm. The new roads are not being made as first-class roads at present, the emphasis is on getting roads cut through as soon as possible. It is anticipated that in the future any part of the entire farm will be within 1,500 to 2,000 feet of a road, and crossroads are currently under construction. This comprehensive network makes for quick dispatch of any possible forest fires with the company's two fire trucks provided at the Vernonia headquarters. The roads, which are built with a large "Caterpillar" tractor, with bulldozer, make excellent fire lanes as a further protection measure. They further abet the forest management program by providing access to the entire area for salvaging and for subsequent harvests of live timber as the crop reaches rotation age.

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TAPPI PRESIDENT BRAWN DIES

Worthen E. Brawn, national president of TAPPI, died suddenly the morning of July 17 as he was crossing the Atlantic, bound for Southampton, England, on the Cunard liner Queen Elizabeth.

He and his wife, Goldie, were on the threshold of realizing a long-cherished dream—vacation tour of Scandinavia and Britain. Mr. Brawn had worked doubly hard in his capacities as TAPPI president and as general superintnedent of the Pejepscot Paper Co., of Brunswick, Maine, in order to make the trip.

In late spring he had made what was virtually a "whirlwind" tour of TAPPI sections in order to stimulate the regional activities of that organization. Part of this tightly-scheduled tour was a flying trip to the Gearhart, Ore., Pacific Coast TAPPI-Superintendents Spring Meeting.

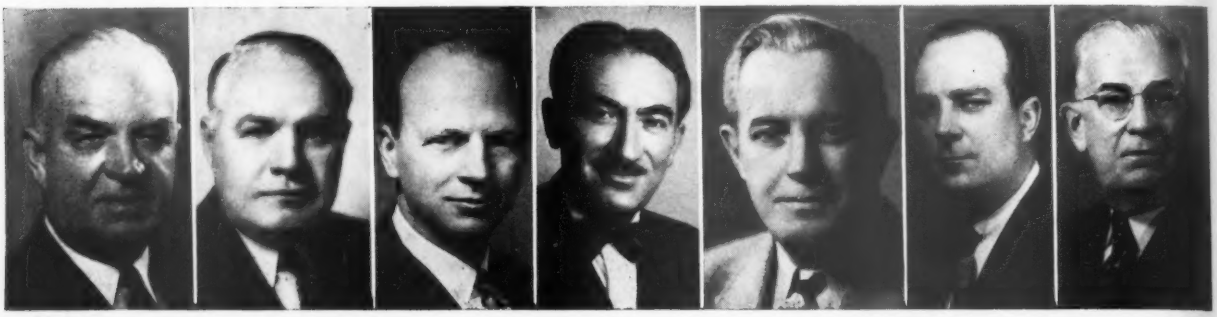
MANTLE OF TAPPI National President is expected to pass on to this prominent Southern industry executive —

WILBUR F. GILLESPIE, Technical Director of Gaylor Container Corp., Bogalusa, La.

Mrs. Brawn was returning to New York on the return voyage of the same ship, accompanying the body of her husband and arriving in New York about July 25.

Born in Bath, Me., a graduate of the University of Maine, Mr. Brawn had been 26 years with Pejepscot Paper Co., of which he was a part owner. He invented a process for impriting color designs on paper on the paper machine. Before joining Pejepscot, he was assistant chemist and later chemist for Spanish River Pulp & Paper Mills, Sturgeon Falls, Ont.

Also surviving is his daughter, Mrs. Beverly Waller of Pearl River, N. Y., wife of a specialist with American Cyanamid Co., and a grandson.



PRESIDENT LOUIS CALDER and a group of Perkins-Goodwin Company officials, some of whom figured in recent changes in that firm's key positions, are shown in the above panel. Left to right are: Mr. CALDER; STANFORD G. BLANKINSHIP, who continues as Vice President (he was former National President of Supts. Assn.); DAVID I. EDWARDS, promoted to Vice President; AVERY J. FEILER, appointed Secretary and Director; PAUL SCALLON, in charge at Chicago, who was elected a Director; RICHARD F. KIST, appointed Traffic Mgr., and WILLIAM H. DONALDSON, who resigned as Secretary and Director for reasons of health. He is one of quartet of veterans who have retired from active company affairs and who are named in article below.

PERKINS-GOODWIN CO. ANNOUNCES CHANGES

Last July the Perkins-Goodwin Company, internationally known pulp and paper organization, celebrated its 100th anniversary climaxed with a dinner at the Waldorf-Astoria Hotel. A company with such a long history—there are very few in the U. S.—sees inevitable changes in its personnel. On June 20, Louis Calder, president of the company (who has been with it for half of its long record), announced the election of two new directors and three officers.

"With deep regret" he accepted resignations of Albert Newcombe, vice president, and William H. Donaldson, secretary-treasurer, both of whom were retiring due to ill health. To succeed them, Mr. Calder announced, the company had appointed David I. Edwards as vice president and Avery J. Feiler as secretary. The latter was elected a director, as was Paul Scallan, now in charge of the Chicago office. Mr. Scallan is a University of Cincinnati fellow-alumnus of several prominent paper industry executives. Miss Agnes V. Dugan was elected assistant secretary.

Mr. Calder also announced retirement of Stanley C. Willey, widely known for a lifetime spent in pulp and paper circles, and Joseph F. Gill, traffic manager, who has been with Perkins-Goodwin 44 years. To succeed Mr. Gill, the company has appointed Richard F. Kist. All appointees have been with the company many years.

Perkins-Goodwin actitivities include not only the distribution of pulp and paper, but management and market counselling as well. In the pulp industry they represent Scandinavian, American and Canadian producers. In the paper field they distribute widely to some of the best known printers, book publishers, and magazines and newspapers in the U. S. Present officers are: Louis Calder, president; Stanford G. Blankinship, vice president; David I. Edwards, vice president; Avery J. Feiler, secretary; Valentine B. Friedel, acting treasurer; and Agnes V. Dugan, assistant secretary. Its headquarters are at 30 Rockefeller Plaza, New York; and it maintains offices in Chicago, Ill., and Lufkin, Texas. It is represented in Sweden by C. Fred Asker at Stockholm.

Bill Donaldson, with Perkins-Goodwin since 1924, made his first transcontinental trip for the firm in 1925. He crossed the continent every year since that time until 1946 when he was taken ill.

Mr. Donaldson entered the industry in 1897, he informed PULP & PAPER last month, joining the Union Bag & Paper Corp. at Sandy Hill (now Hudson Falls), N. Y. He was variously connected during his career with Parsons Trading Company, Gottesman, Craig-Becker, and finally set up his own business under the title of Howell, Donaldson Co. He sold this out to join Perkins-Goodwin. His home address is 180 Riverside Drive, New York City.

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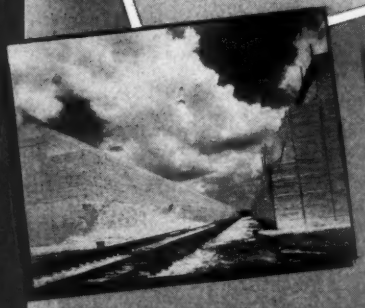

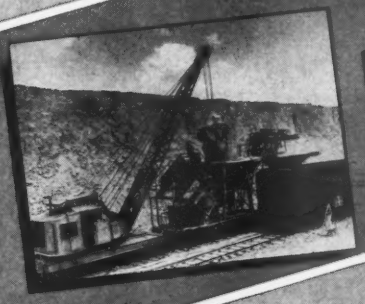

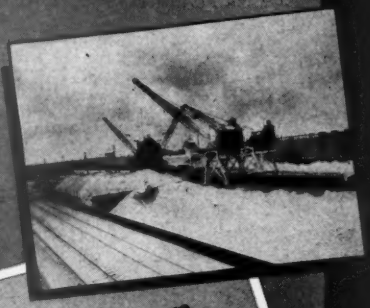

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DISSOLVING PULPS—A SURVEY

By Rex Vincent, Technical Consultant
Bulkley, Dunton Pulp Co., Inc.

Excerpts from the following article were quoted liberally in our Rayon and Plastics sections in the Annual North American Review Number of PULP & PAPER, published in May. Because of widespread interest in the subject and the accuracy of these forecasts to date, we are publishing the entire article herewith.

Not all so-called dissolving pulps are dissolved. Strictly speaking, only those pulps which are converted into viscose products such as filament yarn, staple fiber, and transparent film are actually dissolved. But those products use so much pulp of the purified type that their name for the pulp has carried over and now applies loosely to all pulps that are used in chemical conversion. In this study, the name has been broadened over a still wider area and will apply not only to pulps used for chemical conversion, but also those pulps used for such non-paper purposes as vulcanized fiber and sanitary napkins. More properly speaking, this report will deal with purified pulps—purified to the extent of having an alpha cellulose content above 90%. It is necessary to make this broad definition because the same pulp is used for acetate rayon as is used as a filler for urea-formaldehyde resins; the same pulp that is used for viscose rayon is also acceptable for the manufacture of facial tissues; the pulp for acetate rayon is also used for many impregnating papers and so on for many overlapping uses. On the other hand, there are some pulps produced with an alpha content of 90% and above that are intended for conversion into paper and have nothing to do with chemical conversion at all. All these are the pulps which will be discussed in this survey.

Estimates of North America Capacity and Production

Table I gives a picture of the production and available pulp for recent years in the U. S.

Table I

	1938	*1940*	*1943*	*1944*	*1945*	*1946*
US Production	171,650	288,500	369,731	429,545	355,820	298,474
US Imports	65,220	113,945	129,380	132,675	146,030	202,375
US Exports	72,800	115,204	22,884	10,729	13,030	8,779
Net Available	164,070	287,241	476,226	551,491	488,820	492,070

Source—USPPA.

This table alone provides a snapshot of the whole situation in these special pulps. For example, American production of these pulps in 1946 is not greatly different from what it was in 1940. But notice how much the imports have increased and the exports decreased. In percentage these changes are: imports up to 74% over 1940 and exports down 92%. These great changes in the movement of these pulps are the reasons for the increase in net available of nearly 200,000 tons since 1940. The increase in the imports is a remarkable improvement when it is remembered that all but 10,000 tons of the 1946 imports came from Canada and this source now supplies 39% of our total supply of purified pulps. This percentage would run even higher if it were confined to the rayon grade alone as the American production of that type of pulp alone is not as great as the total figure in the table above would indicate. Canada then deserves perhaps as much study on supply as do the American mills.

In Canada there are three companies operating a total of six mills which are producing at a rate of approximately 260,000 tons per year (1946) and will operate in 1947 at a rate of about 320,000 tons. This rate can probably be pushed a little higher in 1948 as these figures are still below published capacity figures which, although not reliable for estaimating purposes, do give a top limit figure. These capacity figures add up to 398,000 tons per year, but that should not be accepted as what these mills will probably produce. Of the 1947 total it is reasonable to assume that nearly the same percentage will be shipped to the U. S. as in the past which has been about 75%. Therefore, 240,000 tons of these pulps can be expected to come in from Canada during 1947.

In the U. S. there are four companies operating seven mills and during 1946 these mills produced an estimated total of 295,000 tons. This production came from a capacity estimated at 340,000 tons per year on the basis of operations during 1946. This capacity figure may appear low but there are two mills making these pulps today that made pulp for smokeless powder and their actual capacity for that type of pulp does not coincide with what their managements may decide to produce in the purified pulp field. During 1944 when the smokeless powder program was at its height the total production of dissolving pulp was 551,500 tons, which can be taken as an indication of the current absolute top of American capacity for these pulps. The 1946 production is our first indication of the quantity some of the mills will divert to dissolving and purified pulps from the paper grades. In 1947 and 1948 the production of these pulps will increase from the 1946 level, but the increase will not be large as it will come from diversion and from increased operations and not from new capacity. It can be expected that the 1947 production figure will reach 325,000 tons and in 1948 it can go to 340,000 tons, but this last increase is problematical.

The capacity and estimated production figures are set up in the following table on the basis of North America. The export figures are for shipments outside the Continent. These estimates represent what will be available for the manifold users to draw against, but they will be augmented to some degree by imports from Sandinavia. It would be foolish to even guess at what that tonnage will amount to because the actions of the Swedish government are too important a factor. The total imports from Sweden during 1946 were just a little over 10,000 tons and there is nothing to indicate at this writing that the 1947 amounts will be any different. At the maximum it is not expetced that they will run over 50,000 tons and it could well work out to where they would be less than they were in 1946.

Table II

North America Mill Data for Dissolving Pulp
(Estimated)

	1946	*1947*	*1948*
Capacity*	680,000	760,000	775,000
Production	555,000	645,000	680,000
Exports	60,000	75,000	90,000
Available for North America	495,000	570,000	590,000

*See explanation in text above.

Now, what are the demands this quantity of pulp will be called upon to fulfill? This will occupy the balance of the study with each segment of the consuming field given consideration.

Estimates of Celloulose Consumption

A. Rayon—This is by far the greatest consumer of purified pulps and viscose rayon is the largest segment. The acetate process is using wood pulp for yarn but the acetate plastics are still confined to cotton linter pulp. Over a period of years the amount of wood cellulose in comparison to cellulose from cotton linters has increased in the conversion of rayon, but there has also been a considerable expansion in the production of rayon and these two factors together have created a very trying situation. Also, the use of wood cellulose in acetate rayon has been increasing steadily. Wood cellulose offers a better raw material for these people from the economic standpoint even if there are still some technological problems. It is cheaper and it is more stable in its price movements since it is not affected by any other textile fiber such as raw cotton

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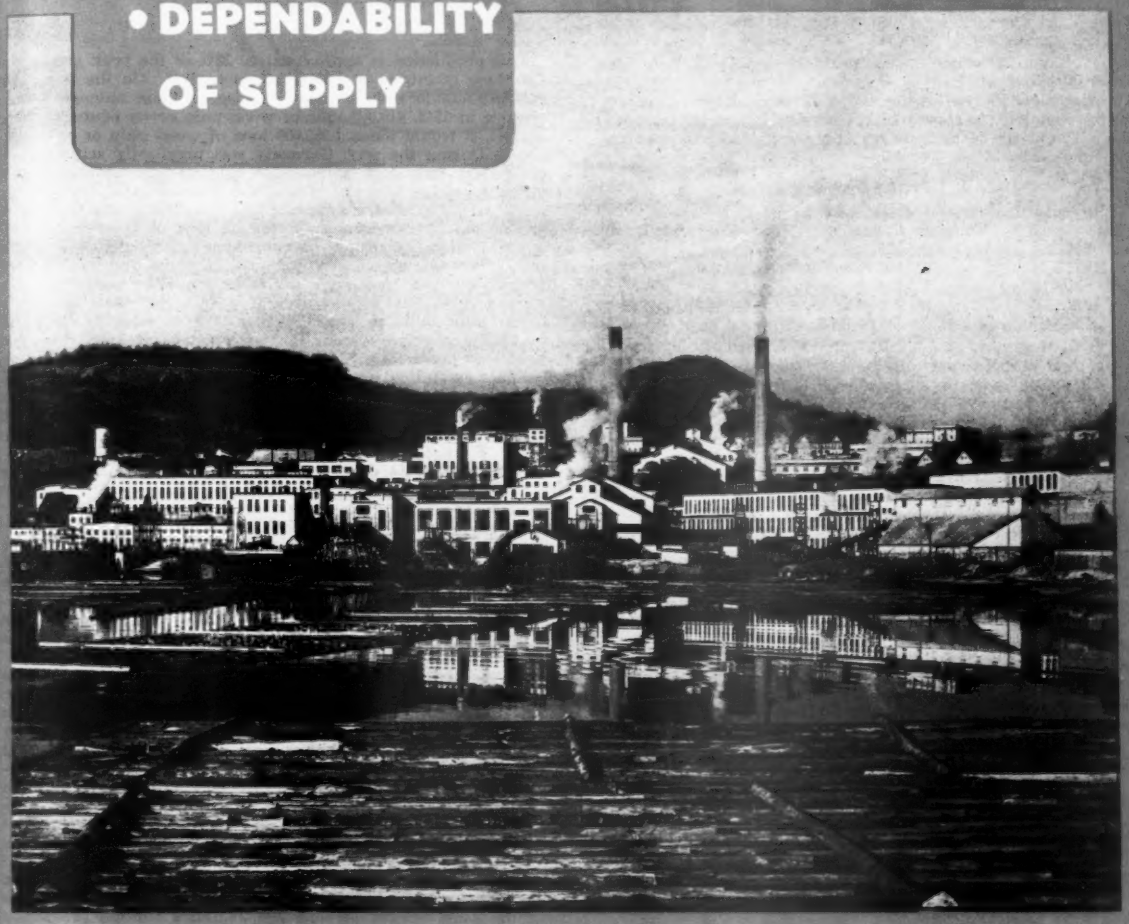

When the raw material—sturdy British Columbia hemlock—reaches the Powell River plant, every facility is available to transform it into high quality Sulphite Pulp. Skilled craftsmen, working with modern machinery and equipment, and rigid laboratory control of each manufacturing process, combine to assure a pulp of superior strength and color. Service and dependability of supply are additional advantages when you buy Powell River Unbleached Sulphite Pulp.

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Unbleached Sulphite Pulp

affects linters nor any other raw material such as cottonseed oil and other products affect linters.

The use of rayon yarns has increased markedly in recent years and the greater production has had its effects on the price of the yarn to the extent that it is now cheaper than cotton. Growth of rayon production is shown in Table III.

Table III

Rayon Production and Cellulose Consumption in the U. S.

Year	Tons Rayon Produced	Tons Wood Pulp Consumed	%	Tons Linter Pulp Consumed	%	Rayon to Wood pulp Factor
1930	63,850	45,000	62	27,000	38	1.419
1935	131,077	86,000	63	51,000	37	1.524
1940	235,585	178,000	75	60,000	25	1.324
1945	396,000	297,000	74	103,000	26	1.333
1946	426,000	321,000	75	105,000	25	1.334

Source: Rayon Organon (also annually in North American Review Number of Pulp & Paper).

The statistical journal of the rayon industry, Rayon Organon, recently completed a survey of capacity and capacity increases and on the basis of this survey, they made forecasts of capacity shown in Table IV:

Table IV

Forecast Capacity—Annual Rate as of Date Shown

Date	Tonnage Capacity	Wood Pulp Required*
Nov. 1946	445,500	339,000
July 1947	482,500	367,200
March 1948	521,500	396,800
Oct. 1948	560,000	426,000

Source: Rayon Organon. *On basis of factor from Table II

There is, of course, no guarantee that this capacity will operate and that the demand will be as great as those figures in Table IV would indicate, but the organizations who are spending the money to develop the expansions must have some idea of the growth of the demand for yarn and certainly will attempt to operate that capacity if at all possible. It is very doubtful if there will be sufficient pulp and other chemicals to permit it to operate even if the demand for the yarn were present, but if there is sufficient pressure for a supply of that type of pulp, somebody will see to it that mills are converted or built to satisfy it. For the purposes of this survey it is sufficient to emphasize the rate of growth and to use those capacity figures for balancing out the total demand for purified pulps against our estimated supply. On the basis of Table IV it is estimated then that the rayon demands for wood pulp over the next two years will be:

1947	1948
350,000 tons	405,000 tons annually

B. Cellophane—Transparent film, now known generally as cellophane is very closely related to rayon as the same process is used for both materials. There are differences in the pulp to the extent that they cannot often be interchanged. Pulp manufactured for rayon can, in dire necessity, be used for cellophane, but it is not economical. However, the same mill can produce both types of pulps. Producers of cellophane are too few for statistics to be published on its production and consumption of raw material, but we do have estimated figures and statistics from the days of the War Production Board for background. Aside from the WPB statistics, these figures are the writer's best estimates (the industry itself refuses even to discuss estimates and the reason is obvious):

Table V

Pulp Consuming Capacity and Use by Cellophane
(In Thousands of Tons)

1943	1944	1945	1946	1947	1948
est.	WPB	WPB	est.	est.	est.
45.	58.	56.	70.	85.	100.

There has been some expansion in these plants and it is believed that the quantities of pulp allocated by the WPB were insufficient to operate the plants at capacity. Expansions are planned for the future.

Thus, rayon and cellophane processes alone have capacities for consuming about 425,000 tons in 1947 and over 500,000 tons in 1948. There are several other small uses of pulp in the viscose processes—those of making viscose sponges, seals, caps and bands—but the amount of pulp consumed is not large. There is no doubt that the consumption figures will increase over the next ten years and they would probably step up rather fast if raw materials, such as caustic soda and wood pulp were readily available. Cellophane is being used more and more over a wide field and its principal competitors will be certain types of paper such as glassine and waxed grades. The other synthetic films such as Pliofilm and Koroseal are finding uses in other markets and are not direct competitors with transparent cellulose film. Rayon is expanding rapidly now, but figures in Table IV do not include two entirely new plants which will produce yarn between 1948 and 1950. The rayon industry is not only expanding in this country, but plants are being built in South America and in other countries and these plants will draw on the same sorces of supply available to American consumers. It might be well to indicate the extent of this demand shown in this table by Rayon Organon:

Table VI

Rayon Production 1945 Other Than U. S. A.
(Short Tons)

Great Britain	72,300
Germany	125,000
Other European	129,370
South America	17,470
Asia	14,040
Total	358,180

This production is approximately 32% of the peak production for these countries of 1,120,865 tons in 1941. On the basis that this production is fundamentally viscose, these tonnages would require in 1945, 410,000 tons of wood pulp or its equivalent and in 1941, it would mean 1,285,000 tons of wood pulp or its equivalent. During the war, Germany was practically self-sufficient on viscose pulp and Italy had developed a substantial use of other vegetable fibers. Considerable quantities of viscose pulp were manufactured in Austria and Czechoslovakia, but there are no statistics available on the amount of these pulps produced in those countries. Japan, the third largest producer in 1941, was obtaining some pulp from Manchuria and her northern islands, but was also importing from this country and Sweden. According to the Department of Commerce, there are eight rayon pulp mills in Japan proper with a capacity of 230,000 tons. Korea and Formosa have a capacity of 25,000 tons and Karafuto 75,000 tons. The summation of this is that Sweden will not be called upon to provide the entire quantity of viscose pulp needed in Europe and the rest of the world. She couldn't do it. Pressure on Sweden from nearby markets will effect to a great degree the amount of pulp for shipment to the U. S. market.

C. Nitrocellulose—This material is not only the oldest of the plastic group but is the base raw material for many different products varying from movie film through molded plastic products to lacquers and other protective coatings. Combined with camphor it produced the first synthetic plastic, celluloid, which is still produced for many uses. Practically all professional movie film is made from nitrocellulose and its lacquers are still regarded as among the finest protective coatings. During the war, of course, thousands of tons of it were converted into smokeless powder and by far the greater part of this was produced from wood pulp.

Today there are three manufacturers of nitrocellulose consuming wood pulp at the rate of about 25,000 tons per year. Nothing is known of the capacities of these plants, but it is believed that they are not currently producing all that they could largely because they cannot obtain sufficient pulp. If they were able to run to full capacity, it would probably require 30,000 tons to do it and this figure will, in all likelihood increase in 1948. The statistics that are available for the production of nitrocellulose rods, sheets, and tubes indicate that the trend is upward as late as the middle of 1946. However, this does not constitute the largest segment of materials produced from nitrocellulose as most of it goes into lacquers and films. No statistics are available for the production of these items for the same reason as none are available for the production of cellophane—there are not enough producers. Therefore, the figures for the consuming capacity of this industry must be estimates. These were checked with people in the industry and they are believed to be fairly accurate . . . 28,000 tons in 1947 and 32,000 tons in 1948 will be demanded for this consumer.

D. Plastics—This group includes not only the plastics such as cellulose acetate, butyrate, propionate, but also the urea-formaldehyde group and such products as carboxy-methyl-cellulose, ethyl and methyl cellulose. The use of wood cellulose in the urea plastics is as a filler and a very high grade of pulp is required so as to get the high whites such as appear in reflector lamp shades and the light pastel shades that are used for such items as drinking glasses. The quantity used in this field is limited, particularly as the production of the plastics are limited by shortages of other materials and at the outside will not exceed 7,500 tons per year for either of the years under survey—1947 and 1948.

The use of wood cellulose in the acetates and other derivatives for plastics is very limited owing to poor color obtained. Some wood pulp is being used for cellulose acetate flake, which is converted into rayon yarn or plastic moulding powder, but this use is small.

A newcomer to the derivative group is CMC or carboxy-methylcellulose and the producer of it expects production to

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increase rapidly. It is being held down now largely because it is a new material and because wood pulp is not available.

During 1947 this material will consume about 1,800 tons and as its use spreads the demand will grow to somewhat near 3,000 tons. It has many uses because of its property of causing a jell in a dilute solution which enables it to produce fine creamy ice cream and at the other end of the end-use scale it can be made to stiffen muds encountered in oil drilling. Various new type inks can also be made fom it.

There are no production figures for either ethyl or methyl cellulose and one must fall back on his knowledge of the industry. The amount of wood pulp used by these materials should not exceed 5,000 tons per year.

Thus, total consumption of wood pulp in these plastic materials should not total over 13,111 tons for 1947 and 15,000 tons in 1948.

E. Miscellaneous Uses—This is an extremely wide group and embraces stereotype mats, facial tissue, sanitary napkins, vulcanized fiber and impregnating papers. The paper part of this group is very volatile as it can consume much more than is currently being used. Facial tissue for example should use a certain percentage of these types of pulps in order to get softness and absorbency but salable tissues can be made without them and are being made today. If these pulps were available this group alone would consume at least 18,000 tons and that figure is probably low. Stereotype mats are using about 1,500 tons and impregnating papers are in about the same position as facial tissues as far as using these pulps are concerned. At least 15,000 tons are going into this field and they are demanding more. Sanitary napkins are currently using at least 15,000 tons and this demand is scheduled to Increase in 1948. Vulcanized fiber added to the figures above will push the consumption of this group to 60,000 tons and the writer has no hesitancy in estimating that these uses would rise to 95,000 tons if these pulps were available.

The figures in the table below will give an idea of the production of these particular types of papers and absorbent stocks:

Table VII
(Short Tons)

	Matrix	Vulc. Fiber	Impreg. Stock	San. Napkin Stock	Facial Tissue
1942	6,371	29,442	8,540	37,610	89,194
1943	5,953	32,167	24,445	39,825	83,696
1944	5,846	27,358	29,155	41,389	79,612
1945	6,019	21,703	31,017	41,467	80,333

Source: Department of Commerce—Bureau of Census.

F. Exports—This is an important bracket to consider inasmuch as we are working with North America, and Canadian exports to countries other than the U. S. are apt to be in large quantities. The producers there are shipping regularly to England, and South American markets are increasing in importance. It is unlikely that exports from the U. S. producers will amount to as much as they have in the past, particularly in the years just before the war, but if the market prices continue as high in other markets as they are, the temptation may be too great. Indications are, however, that producers intend to cultivate and serve the home market. Canadian producers are in a different position as practically their entire production must be exported and it becomes a question for them to decide which country offers the most attractive and sustained market. There is a growing felling in Canada, among some producers that they should spread their pulp out into more different markets than they have in the past and because of this the figures in Table II show some increase in North American exports over the next year. In all probability if a new mill should come into production through conversion from paper pulp the bulk of that production would go to export.

Summary

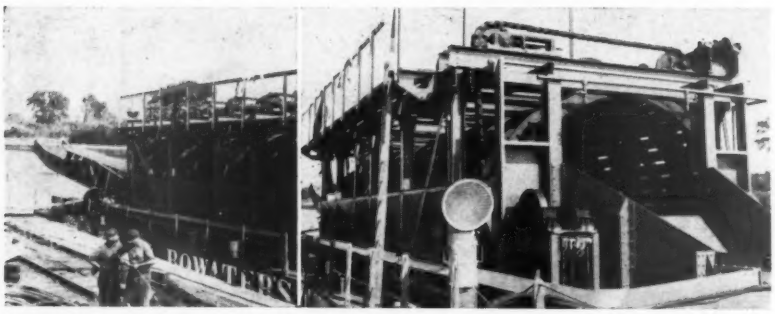
Table VIII, below, sums up the consumption of purified pulps as outlined in the foregoing sections:

Table VIII
(Short Tons)

	1947	*1948*
Rayon	350,000	405,000
Cellophane	85,000	100,000
Nitrocellulose	28,000	32,000
Other plastics	13,000	15.000
Miscellaneous uses	60.000	70,000
Exports	75,000	90,000
TOTALS	611,000	712,000

The figure above for 1947 is very close to the one developed by the writer in 1943 as a post war consumption figure and is close to some private estimates which have been made recently. It must be borne in mind that the statistics in the table are not uniform in that some of them are estimates of what will actually be used and others are estimates of capacity to use. Some of them are bonafide statistics from authorized sources and some are estimates made either by people in the industry or the writer. If reference is made back to Table II it will be noticed that these figures are considerably above the estimated available quantities; therefore, a condition of shortage will exist to the extent of about 40,000 tons for 1947 and about 122,000 tons for 1948. Now, it is within the realm of probability that Sweden could ship a portion of that 40,000 ton shortage, thus relieving conditions for this year, but the shipment of this quantity must be balanced against what has been outlined for the other demands from Swedish production. The condition of shortage will be about three times as bad though for 1948, and it is very likely that Sweden could do much to alleviate that shortage. For one thing, other countries will have their rayon producing facilities almost back to normal and their demands will be higher than they will be this year. Also, it must be pointed out that this shortage, to some extent, depends on increased capacity in production plants, and with a shortage in raw material facing them, some of these people may either postpone their plans until the situation improves or they may take steps to increase the production of these pulps.

BOWATERS' BARKS ON BARGES



Left view is of loading end of Fibre Making Processes barker on barge used by Bowaters' mill in Newfoundland. Right view shows discharge end. The feed conveyor in left view swings down into water when it is in operation.

Barking units installed on barges producing about 400 tons each per 20-hr. work day, along the coast of Newfoundland are for Bowater's Newfoundland Pulp and Paper Mills, of Corner Brook, Nfd., and are proving useful because of mobility and easy access to pulpwood centers.

The latest mobile barker to be placed in operation consists of a 12′ x 45′ chain suspended U-Bar drum in two sections, the design of Fibre Making Processes, Inc., Chicago, and manufactured by the Horton Steel Works, Ltd., at Fort Erie, Ont. The unit is self-contained and driven by diesel motor. The barge itself is 9′ deep by 30′ wide and 100′ long, equipped with jack ladder, discharge conveyer, return conveyor, bark sluice and engine.

The new unit, which augments the service performed by the original barking barge of similar size, serves two pulpwood centers—at Tommy's Arm and Hall's Bay, both in Notre Dame Bay on the east coast of Newfoundland. The spruce and fir pulpwood handled comes from nearby Notre Dame and Bonavista Bays.

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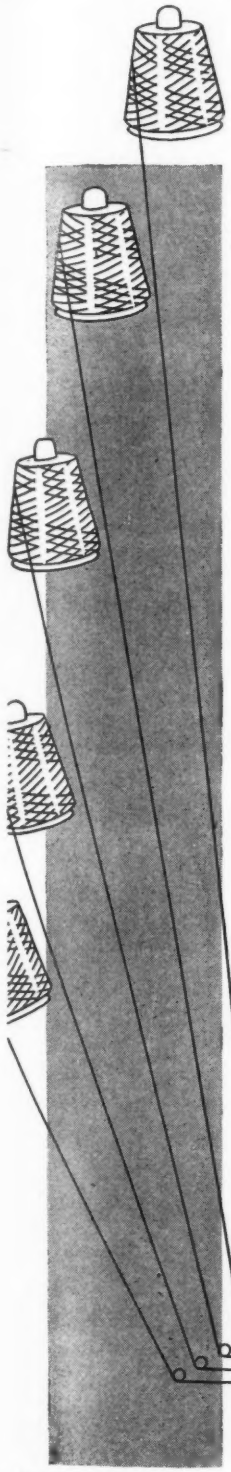

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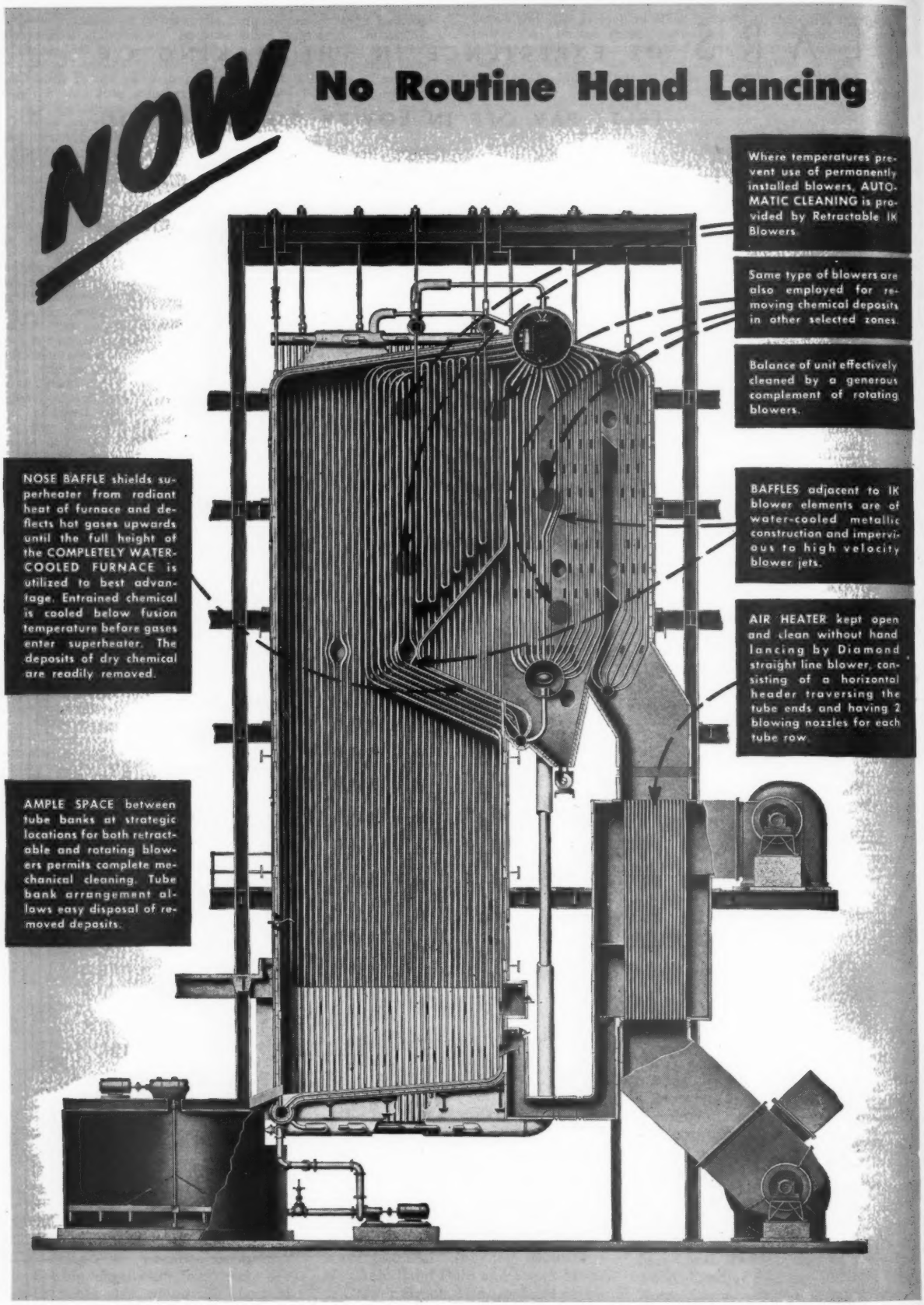
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Shibley Award Prize Winning Paper of 1946-1947

STANDARD REFERENCE SAMPLES IN THE PULP AND PAPER MILL LABORATORY

By Conrad E. Dyar
Rayonier Incorporated, Port Angeles, Wash.

The Shibley Award

This paper by Mr. Dyar was presented at the Joint Annual Spring Meeting of TAPPI and the Superintendents Association at Gearhart, Ore., May 23. It was the last of four papers given at TAPPI sessions on the Pacific Coast during the past year and officially entered in the annual Shibley contest. This contest, named in honor of the late Kenneth "Cap" Shibley, a former prominent chemical engineer, is aimed at carrying out a theme he often expounded — encouragement of young mill employes to think for themselves. Any young person active in some of the Pacific Coast industry is eligible.

Mr. Dyar, chemist at the Port Angeles pulp mill, was graduated from the University of Washington in 1933 and has been with Rayonier since 1935.

The author, Mr. Dyar

Abstracts

The selection, care, and period of use of a standard reference sample in the mill control laboratory are discussed. Necessity of frequent tests of the standard sample is emphasized. Various practical applications of the standard sample as a control in testing are discussed.

Introduction

One function of the mill control laboratory is to assess the quality of the pulp or paper in its various stages of manufacture by physical and chemical tests upon the fiber, and then to furnish the operators, the management, and oftentimes the customer with the proper interpretation of these tests.

In he pulp and paper industry this function of the laboratory is particularly difficult due to the complex nature of the cellulose fiber which must be tested. Analyses for the chemical characteristics of cellulose are subject to the usual complications attendant to analysis of organic compounds, while tests for the physical characteristics are further complicated by variations in calibration of the testing equipment which must be used. The net result is that elimination of all factors causing testing variation is virtually impossible and the laboratory operator must continually contend with these factors which at the best make his tests variable and at the worst make them unreliable.

The purpose of this paper is to present a means by which many laboratory tests may be interpreted with greater accuracy, through use of standard reference pulp samples, which if tested concurrently with the various samples evaluated by the laboratory, will provide a basis or standard to which all other samples can be referred. This standard will serve as a bench mark and by so doing will tend to minimize the irregularities in testing which result from the complicated structure of the product tested or from the type of testing equipment used.

Reference pulp samples, or control samples as they are often called, have been used in some mill laboratories for many years. Perhaps their most common use is as a check on the calibration of the 1½-pound laboratory beater as suggested by the TAPPI Standard Method (2). When used for this purpose more or less frequent runs of the standard pulp are made in the beater to determine whether its calibration is changing. Forman and Niemeyer (1) show beatings of a standard pulp obtained over a period of about 18 months in each of two beaters at the Institute of Paper Chemistry. By making test runs of their standard comparison sample at intervals, they were able to determine whether their beating equipment had changed sufficiently to warrant recalibration. It is worthy of note that the use of standard samples is not stressed in other TAPPI methods.

The General Problem

The tests of a pulp or paper in the mill laboratory fall into two general categories: (1) Evaluation of its physical properties, and (2) Evaluation of its chemical properties.

THE PHYSICAL PROPERTIES

Determination of the physical properties requires an accurate evaluation of the strength and freeness of the fiber. This is determined by subjecting the pulp fiber to some type of beating or milling, for example: in a ball mill, beater, kollergang, or other device which will cut and hydrate the fiber. At intervals during the beating process, tests are made for freeness to measure the rate at which water will drain from a suspension of the pulp; and test handsheets are prepared which after drying and conditioning are commonly tested for bursting strength, resistance to tear, and folding endurance. Other properties of the handsheets which may be of interest are opacity, porosity, apparent density, tensile strength, etcetera.

Beating and subsequent testing may be influenced by controllable factors as the consistency of the stock when tested, the temperature, or the humidity. More difficult to control are changes in the beating equipment, for example: variation in sharpness of the tackle of the beater or in the amount of wear in the ball mill jar. Moreover, these determinations are always susceptible to variations in the individual technique of the operator making the test.

THE CHEMICAL PROPERTIES

When establishing the chemical characteristics of a pulp, determinations may be made for alpha, beta, and gamma cellulose, pentosan content, viscosity, bleachability, or other properties. The procedures followed are usually of an arbitrary nature, making reproducibility dependent upon the care with which the operator follows certain prescribed details specified by the method. These tests are oftentimes influenced by factors known to the analyst but difficult to control; or the source of the variations may be unknown, thus further complicating the problem of getting uniform results.

The Standard Reference Sample

The foregoing briefly illustrates the type of testing found in the mill control laboratory, and it becomes evident that a standard of reference will be of great value when interpreting results. Specific uses for the standard will be discussed, but first some comments on its selection and care are in order.

SELECTION: It is preferable that the pulp chosen as a standard be similar to the

Simpson Officials On Trip to Sweden

Two officials of Simpson Logging Co., which started up its new insulating board mill at Shelton, Wash., this spring, left on a two months trip to Sweden in late June to study forest utilization practices in that country.

They are George L. Drake, vice president in charge of logging, and Arthur T. Walton, assistant manager of the Simpson woodfiber division (Manager of division is Vice President C. J. Macke). They flew from New York to Stockholm but on the return trip in late August planned a stopover in England.

Bert Sullivan Dies

Bert Edgar Sullivan, night superintendent of the Simpson Logging Company's new insulating board mill at Shelton, Wash., died suddenly while rowing a boat, accompanied by his wife, on nearby Hood Canal on June 20. He was 54.

Mr. Sullivan was superintendent at the Crown Zellerbach mill in Camas for nine years before joining Simpson last October. He was with Crown at Lebanon, Ore., from 1935 to 1937 and from 1927 to 1935 he was with Rayonier mill in Shelton, the last two years as night superintendent.

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type or grade usually tested. In some cases it may be desirable to select the best of the product that can be made; thus when values secured in testing the standard are approached by tests of production, it will be known that an acceptable product is being manufactured. In any event, the sample should be representative of pulp produced at one time under uniform operating conditions. A sufficiently large sample should be taken to provide an adequate supply for a year or longer.

STORAGE: To prevent undue degradation, the sample should be stored in a cool dark place. For many purposes, no further precautions need be taken, but if the sample is to be used as a standard for physical testing, care must be exercised to maintain a constant moisture content over the life of the sample. This is necessary as the physical characteristics of a pulp are easily influenced by variations in the moisture content of the sample tested. One system which has been satisfactory is to store the sample in an airtight box and always test at the original moisture content. Another method is to dry the sample (before starting its use) to an easily maintained moisture content usually 93 to 94 per cent bone dry.

LENGTH OF USE: Since pulps vary widely in their degree of refinement, it is difficult to prescribe a limit to the length of time that a standard can be used before replacement. During short storage periods bleached sulfite pulps generally show little significant change in their properties, although upon longer periods of storage, strength, freeness and viscosity usually decrease. It is probably safe to say that a book or bond pulp can be used as a standard for at least one or two years without serious changes in its characteristics. A wise precaution might be to allow a few months' aging before initial use of the sample. *Table* I shows some of the values obtained when beating a book sulfite pulp used as a standard for the ball mill between May 1941 and April 1943. The data show values secured over this period to be well within the limits of experimental error. A test, made in January 1947, long after use of this standard had been abandoned, shows definite evidence of degradation.

TABLE I

AVERAGE VALUES FROM CALIBRATION TESTS
Standard Sample S-118 (Book Sulfite Pulp)
Ball Mill Tests
50% R.H. - 70°F

Sheets: TAPPI Standard - Nominal Weight 38 pounds - 24x36 - 480 ream

Date Tested	5/20/41	8/27/41	8/31/42	4/3/43	1/30/47 Single Test
FREENESS					
Canadian Standard-ml.					
1800 revolutions	650	645	655	665	635
3000 "	560	555	560	575	510
4200 "	430	445	420	445	410
5400 "	320	325	305	310	305
MULLEN					
Points/100 lb.					
1800 revolutions	71	67	64	68	57
3000 "	94	91	88	92	81
4200 "	112	109	105	107	89
5400 "	118	113	112	113	98
TEAR					
Gms./lb./ream					
1800 revolutions	2.9	2.8	2.7	2.8	2.6
3000 "	2.3	2.2	2.1	2.2	2.0
4200 "	2.0	1.9	1.8	1.8	1.7
5400 "	1.8	1.7	1.6	1.6	1.6
FOLD - M.I.T.					
Double folds/lb./ream					
1800 revolutions	2	1	1	1	1
3000 "	6	4	4	5	2
4200 "	13	11	12	11	4
5400 "	22	13	22	18	7

Note: Beating revolutions shown are arbitrarily taken as standard. In practice, revolutions of each jar used for routine testing are adjusted to give a rate of beating comparable to the rate of beating of the master jar.

Prior to replacing a standard sample, concurrent tests of both the old and the new sample should be made in order to establish their relationship before making the change to the new sample.

FREQUENCY OF TESTING: The standard pulp should be tested frequently in order to relate definitely the characteristics of the routine samples to those of the standard. This depends to a considerable extent upon the degree of error inherent in the particular method used. For example: In the analysis of a pulp for its ash constituents, reference standards are seldom necessary because these determinations, being simple inorganic analyses, usually perfected over the course of many years by numerous investigators, are readily reproducible. At the opposite extreme is the evaluation of a pulp's physical characteristics by use of the laboratory beater. Due to the idiosyncrasies of the beater, very frequent tests of the standard are desirable in order to follow the continuous variations in the calibration of this useful but far from trustworthy laboratory tool, and one test for every two tests of routine samples has proved quite satisfactory. Tests in the ball mill, while considerably more reproducible than beater tests, are nevertheless, subject to variation. In this case, a test of the standard for every five routine samples tested should enable reliable data to be secured.

When determining the cuprammonium viscosity of dissolving pulps, a test of the reference sample run on each shift making routine control tests by a quick method has been successful in combination with triplicate determinations for the viscosity of this sample when testing the finished pulps by a slow solution method. Determinations of alpha cellulose content or dilute caustic solubility usually require less frequent tests of the standard. In a schedule calling for three or four tests of routine samples each day, weekly tests of the reference sample by each operator should be sufficient.

If there is any question concerning the frequency of testing, it is better to err on the side of too many rather than too few tests of the standard reference sample. In any event, the number of tests required for a given number of routine determinations must be decided by those most familiar with the methods, their reliability, and their ultimate use as a source of information.

Applications

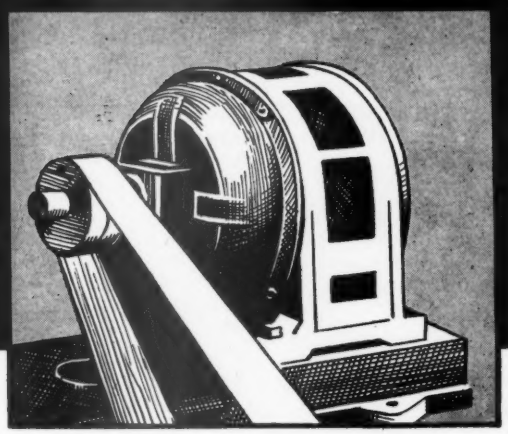
TESTING LEVEL: While the standard sample may serve many purposes in the laboratory, its use in establishing and following testing levels is of first importance. Other applications represent corollary or incidental advantages to be derived from its use.

Crumpler and Yoe (3) point out that: "Some physical quantities are not susceptible to measurement in terms of any absolute standards" (such as mass, time, or temperature) "at least not with the techniques developed up to the present. It is usually possible, however, to obtain a numerical relation or ratio between the values of the given property for two substances A and B. Then if B can be related to C, C is related to A."

In effect, this is the usual type of measurement which must be made in the mill laboratory. Here, the problem may be: Whether the pulp produced today is similar in strength and freeness to that produced yesterday or last week; or whether alpha cellulose values secured one month can be compared directly with values of another month; or whether a competitor's pulp is better or worse in some respect than that of a certain mill. Thus, frequent tests of the standard sample will supply the basis of comparison to which all samples can be related.

For example: During the course of several runs of a high alpha pulp, beater tests were made on every 75 tons of pulp produced from the drying machine. For each two tests of this production, a sample of similar pulp serving as a standard was tested. With the standard pulp as a basis for comparison, it was possible to control closely the quality of the mill production. *Table II* is a summary of three runs of this pulp showing average values of production and of the standard sample. The mean testing level varied considerably, with the greatest difference evident in the November run where calibration of the beater changed markedly

keeps motors running smoothly— reduces wear



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shortly after starting the run. These average data show:

1. That pulp from the three runs was of satisfactory quality with respect to freeness, Mullen, and tearing strength, as average values of the production samples were similar to those of the standard originally selected as a pulp having the desired quantities.

2. That in spite of the change in testing level of the beater during the November run, pulp characteristics were similar to those of the standard and thus similar to those of the preceding run.

3. That freeness of the January production decreased a little faster and that this production had slightly lower tearing strength than pulp of March and November. These differences were readily explained by differences in mill operation.

Another instance of successful application of a standard sample has been in maintaining a uniform testing level when determining the cuprammonium viscosity of dissolving pulps. Samples of the day's production were dissolved in cuprammonium solution by a slow solution method requiring about 20 hours for complete dissolution. Viscosity of these dispersions was then determined by the falling ball method. While the testing level for any given day's run remained reasonably constant, variations in level from day to day could not be eliminated; and accordingly, it became necessary to test a standard sample concurrently with the samples of production. Viscosity of the production samples was then corrected on the basis of the viscosity of the standard. A few values secured in this manner are shown in *Table III* to illustrate the method followed in making the correction. In actual practice, the correction was applied to the viscosity of each sample tested, but in order to condense the data average values only are shown in the table. It would ordinarily be better to use a standard with a viscosity more closely approximating the viscosity of the pulp tested; however, in this case, the same standard was used at four mills manufacturing pulps in various viscosity ranges, most of which were lower than that of the pulp shown in the table. Use of this method of compensating for variations in daily testing level has quite recently been successful in correcting intrinsic viscosity values secured through use of cupriethylenediamine reagent for solution of the cellulose.

TABLE II

AVERAGE VALUES FROM SEVERAL RUNS OF A HIGH ALPHA PULP

Beater Tests No. 2 Beater
50% R.H. - 70°F

Sheets: TAPPI Standard - Nominal Weight 38 pounds - 24x36 - 480 ream

	Minutes Beating	March 1946 Pro-duction	March 1946 Stand-ard	November 1946 Pro-duction	November 1946 Stand-ard	January 1947 Pro-duction	January 1947 Stand-ard
FREENESS Canadian Standard-ml.	60	500	505	470	470	490	495
	90	350	350	310	310	365	380
	120	190	190	165	165	210	230
MULLEN Points/100 lb.	90	75	69	65	61	64	60
	120	83	78	73	68	68	64
TEAR Gms./lb./ream	90	1.84	1.89	1.63	1.60	1.82	1.91
	120	1.61	1.62	1.39	1.38	1.47	1.52

TABLE III

ILLUSTRATION OF PROCEDURE FOLLOWED IN CORRECTING FOR DAILY FLUCTUATIONS IN THE TESTING LEVEL OF CUPRAMMONIUM VISCOSITY DETERMINATIONS

Date 1946	Cuam Solution Serial No.	Average Viscosity of Three Standards Seconds	Correction Factor *	Average Viscosity of Production Samples: Reading Seconds	Average Viscosity of Production Samples: Corrected Viscosity Seconds (Reading x Factor)
6/26	3122A	15.1	1.013	65.9	66.8
6/27	3129	14.9	1.026	67.5	69.3
6/28	3129	14.6	1.048	68.3	71.6
6/29	3129	14.3	1.069	72.6	77.6
6/30	3130	14.9	1.026	75.9	77.9
7/1	3130	14.8	1.033	68.0	70.2
7/2	3130	14.6	1.048	68.6	71.9
7/7	3130A	14.5	1.055	68.1	71.8
7/8	3136	14.5	1.055	71.3	75.2

* Correct viscosity of standard sample was considered to be 15.29 seconds. Thus, on any day:

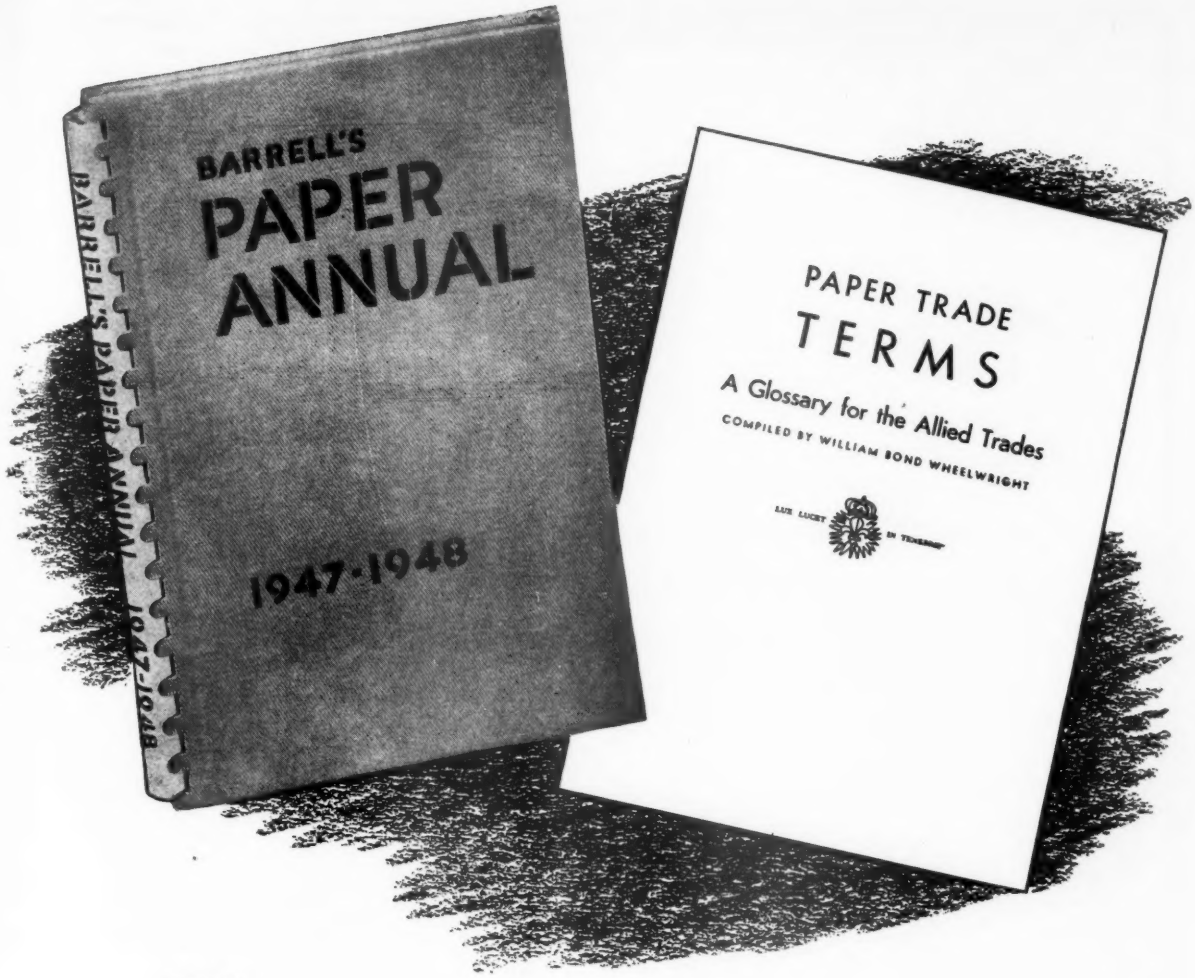
$$\text{Correction Factor} = \frac{15.29}{\text{Average Viscosity of Standard}}$$

CALIBRATION OF EQUIPMENT: In *Table I* are shown data from ball mill calibrations when using a book sulfite pulp as a standard. These values are the average of tests made in several jars used for routine testing after calibrating these against a master jar reserved for calibration purposes only. From May 1941 to April 1943 about three per cent reduction in revolutions of the jars was necessary in order to keep the beatings comparable to the beating in the master jar. Obviously any pulp could have been used to make these calibrations since the standard of reference in this case was another jar. However, there is always considerable advantage to using a pulp which has well known physical characteristics and in having a sample which has been carefully selected for uniformity. Moreover, by using the standard pulp it is possible to secure a thorough check upon the general testing level. This is advantageous although the standard sample may be run regularly between the calibrations as another check upon the testing level.

While deviating far from what might be termed a fundamental standard, the use of a master jar in ball mill calibrations is a refinement not usually available with other types of beating equipment. The beater exemplifies the more common situation wherein there is no standard piece of reference equipment which can be used. This indicates the use of a standard pulp sample which, if regularly tested, will establish the normal testing level. Then when calibration is necessary, the required changes are made in the beating tackle in order to bring tests of the standard to the previously established levels. In *Table II*, the March tests represent a satisfactory testing level. During the November run, the rate of beating as judged by the freeness was higher than wanted and immediately thereafter the beater was recalibrated. Values secured in January indicate that the March level was approached.

When testing paper, routine tests of standard paper samples have been found to yield valuable information concerning the state of calibration of the various types of testing equipment used. In this connection, the highly uniform sheets cast on the British sheet mold have proved excellent for the purpose of determining agreement between several pieces of testing equipment of the same type; for example, between two Mullen testers or two tear testers at different stations.

COMPARISON BETWEEN METHODS: It is sometimes necessary to make comparisons between two methods of testing, or to determine whether refinements in technique employed in a certain method add anything to its precision. The variation in values secured from tests of a



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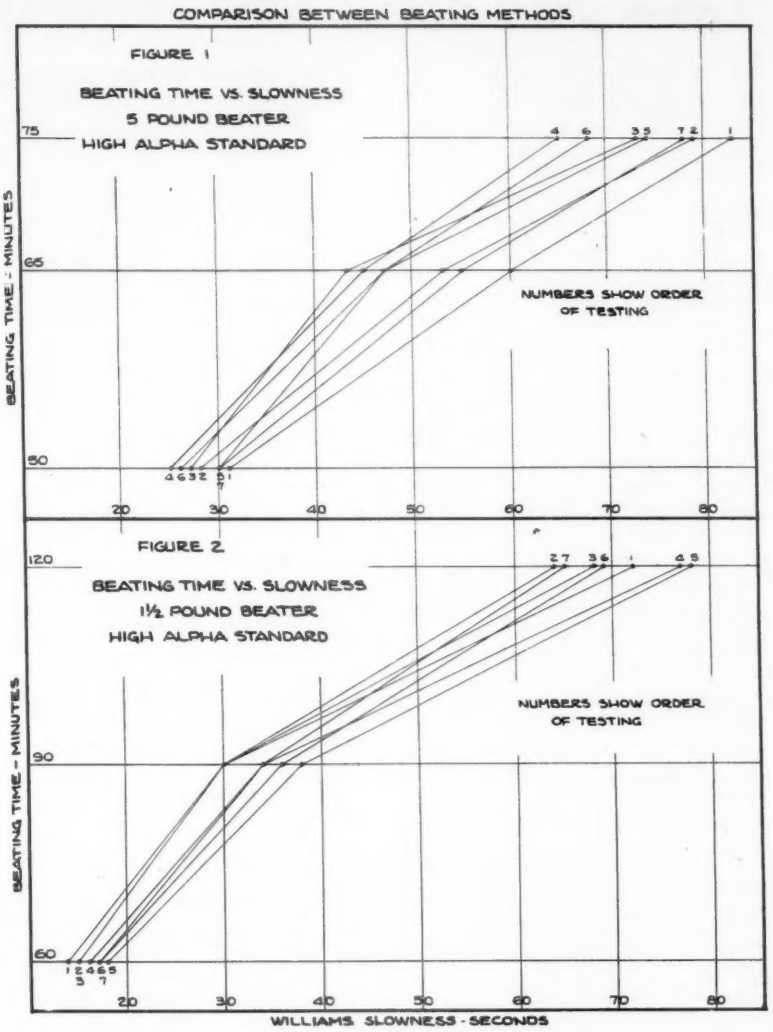
control sample run concurrently with the routine samples offers a basis for comparison which is of great value when choosing the best procedure.

Figures I and II show a comparison of this kind. Here the problem was to compare the reproductibility of slowness with respect to beating time in two types of laboratory beaters. Slowness plotted against time for seven tests of the standard pulp in each beater indicates that in this particular case there was slightly greater testing variation in the 5-pound beater than in the 1½-pound beater. Similar comparisons could be made by plotting Mullen strength, resistance to tear, etc., against beating time or against freeness or slowness.

The data derived from tests of the standard sample can also be used to evaluate the relative merits of different methods for determining alpha cellulose, bleachability, viscosity, and other chemical or physical tests.

COMPARISON BETWEEN OPERATORS: It is generally agreed that all tests are influenced to a greater or lesser degree by differences in the personal technique of the operators making the test.

All operators vary in their experience, their manual dexterity and, as everyone else, in their intelligence; few operators can follow a procedure to the letter day in and day out without occasional reference to the written method. For these reasons a standard sample tested as a matter of routine at regular intervals by the operators on a given job will be of assistance in forestalling wide deviation from the standard procedure with consequent variation in test results.



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2. TAPPI method T200 M-45 (April 1945).
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Analysis of Data

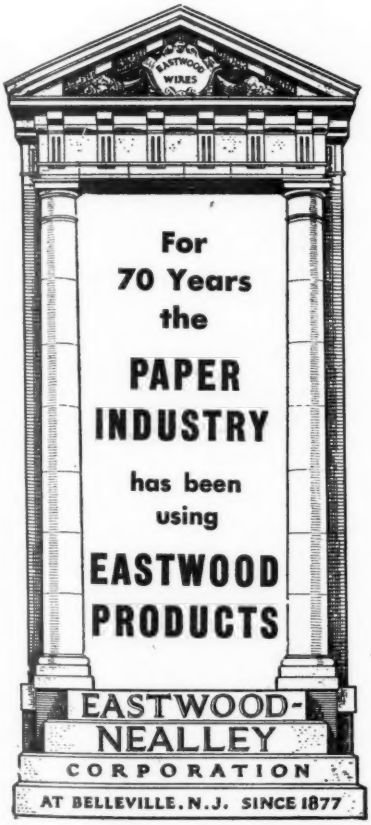
The value of the data secured from tests of the standard sample depends to a large extent upon the method followed in presenting this information to those interested in laboratory control. Frequently a tabulation of tests of the standard sample in parallel columns with tests of the routine samples is sufficient, while in other cases it may be desirable to plot the values of routine and standard samples on a chart to facilitate the comparison. Wernimont (4) discusses use of control charts in the analytical laboratory with particular reference to comparing the over-all variability of test data with average variability of small groups of data.

The alert operator or supervisor will be in the position of selecting the method of presentation which will best suit his particular problems.

Summary

The selection, care, and length of use of a standard reference sample in the mill control laboratory are discussed. The necessity of frequent tests of the standard sample is stressed and a number of practical applications for use of the standard in control testing are discussed.

This report is not intended to set forth any rigorous procedures which must be followed when using standard reference samples in the mill laboratory. Rather, the purpose is to discuss a few of the principles concerning use of these samples to improve testing uniformity with resulting benefits to the mill. Invariably, wide application of reference samples discloses irregularities in testing not previously recognized as such, thus showing the need for critical study of currently accepted procedures.



PENN SALT OPENS NEW PORTLAND, ORE., PLANT

The new Portland, Ore., plant of Pennsylvania Salt Manufacturing Co. of Washington went into production of industrial raw products—chlorine, caustic soda, and DDT—when the control switch was ceremoniously closed on June 21.

Among prominent personnel of the organization officiating at the opening were Y. F. Hardcastle, vice president and N. E. Bartlett, retired vice president, both of whom came west from Pennsylvania for the opening; Fred C. Shaneman of Tacoma, Wash., vice president of the parent organization and president of the Pacific Coast Company; Leroy M. Shaneman in charge of sales at Portland, and Glen More, superintendent of the new plant.

The new operation is the culmination of a start made 20 years ago when Mr. Hardcastle and Mr. Bartlett came to the Pacific Coast and purchased factory property at Tacoma and incorporated Tacoma Electrochemical Co., subsidiary of Pennsalt. A plant was built with original cost of $700,000 and has since expanded into a $6 million organization.

Originally the products manufactured at Tacoma were chlorine, caustic soda, and sodium hypochlorite with daily tonnage of 12 tons. Now production also includes Penite, sodium arsenite, and hydrogen supplied to Wypenn Oil Co. for oil hydrogenation. Current tonnage from the Tacoma plant and the new Portland installation will be in excess of 200 tons of chlorine and caustic soda daily.

LEFT TO RIGHT—FRED SHANEMAN, President of Penn Salt Mfg. Co. of Washington; N. E. BARTLETT, retired Vice President of the parent company, and Y. F. HARDCASTLE, Vice President of parent company.

Fred C. Shaneman first joined Pennsalt in March, 1930, as salesman. He became sales manager in 1932 and manager in 1934, at which time western company name was changed to Pennsylvania Salt Manufacturing Company of Washington. In 1938 he was made vice president of the subsidiary and in 1941 vice president of the parent company, and he became president of the western subsidiary in 1945.

A 55-acre site at Portland was selected in 1940. The reason for locating a plant there was the low cost of industrial power available from Bonneville Dam over lines of the Pacific Power & Light Company, With the initial investment of $1 million, the Portland factory went into production in 1942 making potassium and sodium chlorate, sodium hypochlorite (with trade name "Clor"), and Penco Desooter. This plant made the United States self-sufficient for wartime and peacetime production in sodium and potassium chlorate, the plant being the first to produce these products in U. S. west of Niagara Falls, N. Y.

In 1946 construction was started on the new Portland plant for manufacture of raw products—chlorine, caustic soda and DDT. This is the first to manufacture DDT north of Los Angeles, Calif., and the first to manufacture chlorine and caustic soda in the important Columbia-Willamette River paper industry area.

This plant has 1280 ft. frontage on a deep water channel of the Willamaette just above St. John's bridge.

Bulk of the products manufactured by the Portland plant will go to supply the pulp and paper mills of the region. Chlorine from the new plant will be used for treating water in swimming pools and household consumption, treating sewage, flour bleaching, and food processing. Caustic soda is also used in the manufacture of soap, oil refining, food dehydration, and in making resin size.

Interesting to management and engineers is the fact that this new Portland plant, as planned in 1945, was completed at a cost varying only 2% from original estimates. Also it was carried out on schedule.

AIR VIEW OF PENN SALT plants at Portland, Ore., where chloride and caustic soda and other chemical products for the Pacific Coast pulp and paper industry are made.

Abitibi Shows Profit

Net profit amounting to $5,600,205 is reported for Abitibi Power & Paper Co. for its first year of operation since reorganization, and of this amount $1,453,652 was realized during the first four months of 1946 while the company was still under receivership.

New Carton Plant

Gair Co. of Canada is planning a new carton and container plant at Mount Dennis, near Toronto, for which David Shepherd, Edgar A. Cross and A. G. Facey are consulting engineers and architect. H. H. Angus is consulting mechanical engineer.

Union Leader Appraises Policy

(Continued from page 22)

the time office. His accessability and the fact that he was "one of the boys" made it easy for the men to "bawl him out." When we were there the idea was working out very well. It would seem like a good plan for any company whether the labor turnover is a serious question or not. Complaints and gripes can be more quickly traced down and the remedy applied. A man in this position can and should be of service to the men in many matters not directly connected with operations and thereby bring credit to the company and satisfaction to the men.

Locals' Joint Committee

The best set-up I know for handling labor-management relations is in effect in the mill where I am employed. There are two local unions in this mill, the International Brotherhood of Paper Makers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. They have a joint union shop agreement with the company. Besides the usual terms of our labor agreements, provisions are made for a "Locals' Joint Committee." This committee is composed by the terms of the agreement, of four members elected by the Paper Makers local and 13 members elected by the Pulp and Sulphite local. It is the duty of this committee to take up complaints, discuss with management anything management wishes to submit and in general represent the men in matter of mutual concern.

For a number of years this committee, through a sub-committee, has arranged for the purchase of coal for the employees and for weekly payroll deductions to pay for it. The sub-committee makes their own deal with the coal merchant and arranges for delivery by contract. During the war, when firewood was hard to get and the government was subsidizing the merchants in order to get a reasonable supply of wood without raising the ceiling price to the consumer, the committee formed a co-operative and through this incorporated organization supplied the employes with fuel wood and the privileges of payroll deductions.

During the war the Locals' Joint Committee took charge of all war bond savings certificate drives and almost without exception put them well over the top. On the recommendation of this committee an Employee's War Service Fund was created and maintained during the war. The committee made the canvass of the mill suggesting that every employee receiving less than 65c per hour would donte 10c per week and those receiving 65c or over donate 25c per week. A special committee was formed to administer this fund and the committee was registered with the Dominion government under the war charities act. All monies had to be donated to organizations doing war service work or for the benefit of men in the services. Out of this fund during the war, organizations doing war work received nearly $25,000. In addition cigarets and parcels containing food, candy (when available) and toilet articles were forwarded regularly to the company employes in the services. Out of this fund the sum of $150 was given to the beneficiary of each of the seven employees killed. And there is about $2,000 now left in the fund which is being liquidated by donations to special charitable work such as community drives and for comforts for returned service men confined to hospitals.

Through the efforts of this committee and the generous cooperation of company officials a fishing

club has been organized with fishing rights on crown land where you can really catch fish. The regulations for the club were drawn up by a sub-committee and had to meet the approval of the Provincial government. The entire responsibility for the operation of the club is now in the hands of the club organization whose officers are all workers in the mill or office and who are elected annually by the members. Membership is optional and costs a small fee yearly.

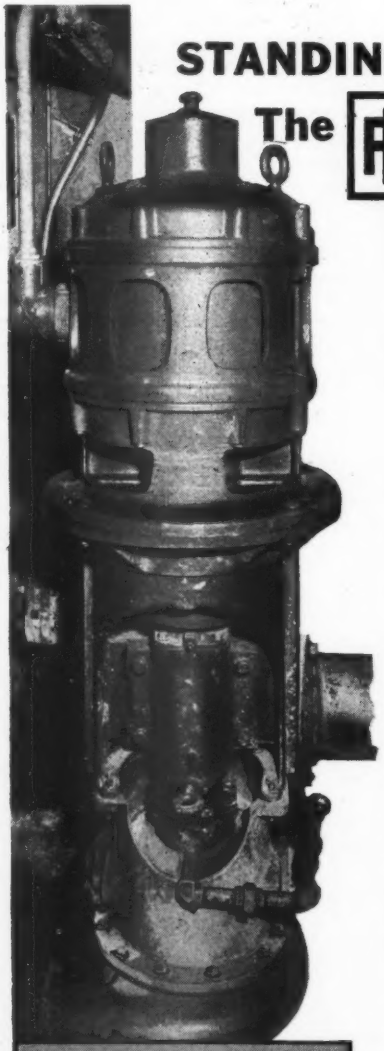
When "income tax season" comes around, arrangements are made with the income tax office for a couple of men from the office to spend several days around the mill helping the men with their income tax reports.

The labor agreement provides that the local unions may appoint special committees to deal with the management on matters that only concern the members of one local union but in the main the Locals' Joint Committee is the "Committee of all Committees." To tell about all it does would take too much space, the above are just samples of all its activities. Management does not always agree with conclusions arrived at by the committee but does not interfere with its freedom of discussion and decision. There are no management representatives on the committee and the committee usually takes over the board room of the company for its meetings.

There are several important angles concerning its organization and functions. One is the fact that one local union has 13 members while the other has but four. Due to the seeming impossibility of the Paper Makers locals and the Pulp and Sulphite locals to get along harmoniously in some localities, it must be placed to the credit of the two locals which this committee represents that they do get along together splendidly. The committee has a rule, however, that matters that only concern one local cannot be voted upon by the representatives of the other local and anything voted upon by either of the local unions cannot be changed by the committee. Evidence of the harmony which prevails is presented when the yearly election of officers takes place. There is an understanding that the chairman will be selected from the representatives of one local union for one year and from the other local union the next, and alternate each year. Sometimes however, a chairman is kept in office for several years regardless of which local union he belongs. The presidents of each local union are always members of this committee but cannot be elected chairman. They are there to look after the interests of their respective local unions.

It is my impression that safety matters are handled about the same in all mills, that is by safety committees made up of management and labor representatives with a safety director responsible for the general application of safety rules. The best results, however, I believe are achieved when the men, through their local unions select their representatives on the committee. When local unions elect their representatives on the safety committee they hold them responsible for safety conditions and often there are discussions at the union meetings concerning the safety of certain practices or conditions.

Old age pension plans are coming into the industry very rapidly. A number of companies have adopted them and others are in the process of negotiation. The general practice is to allow credit for past services of one per cent of a man's salary for each year of service and the company pays for all past service back to age 30 or 35. For future service the companies pay part and



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the employees part. The credit for services after a plan becomes effective is usually about one and one-half per cent per year of service up to retirement age.

Personal Factor

Speaking of industrial relations in general in the paper industry, I think all concerned can be proud of the harmony that exists. While safety work, old age pensions, group insurance and other such benefits contribute to the feelings of security and peace of mind of the employes they are not by any means the most important factors in good labor relations. Nor is the machinery set-up to provide contact between management and employes so important as long as there is some well organized machinery. The most important factor in establishing and maintaining harmonious labor relations is the personalities responsible.

A "sour puss" in the main office who feels so important that his decisions or opinions must be put on a par with the Ten Commandments, a horse trader who looks upon democratic collective bargaining as a necessary evil and meets every situation in the spirit of getting all he can out of it with little regard for the right answers, a self-righteous individual who concedes most readily when there is some advertising in it for him, a man who is too busy to open his doors to his employes, or too impatient or lofty-minded to consider the minor complaints of the workers, the manager who lacks the ability to pick personnel directors or other officials who can smooth his labor relations problems for him, or the man who so binds up the movements of the men he picks for these positions that they are only puppets that jump when he pulls the strings, is the greatest menace to good labor relations.

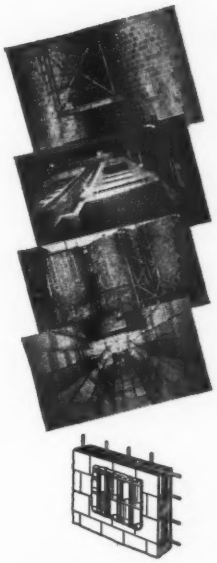
There are, of course, disagreeable labor officials and local union representatives but there are few if any in the more responsible positions in the unions of the paper industry. If there are, they are no better promoters of good relations than the same type of men in management. Good labor relations will prevail only when a spirit of confidence and goodwill prevails between those who are responsible for these relations; when representatives of both elements responsible have the wisdom, tolerance and broadmindedness to consider with sympathy and understanding the other's viewpoints and problems. Labor-management relations will be successful when they are looked upon as part of the business, to be handled as intelligently as any other problems of the business; when the right answers to all problems are diligently sought, found and applied; when democratic thinking and discussions can prevail and each side can speak frankly with no fear that opinions expressed will rebound to the detriment of the individual personally.

The creation of these conditions is management's problem. The spirit must come from the top and filter down to the bottom. If the filter through which the right spirit must pass gets clogged in places, it is management's job to clear it. Minor or subordinate officials should not be allowed to block the filter. If union representatives block it, it is still management's responsibility. In both cases it is a matter of convincing the parties concerned that the spirit is right or of making it right.

There should be no argument about "who is right." The question must always be "what is right." Personnel men should have the courage of their own convictions. Their hands should not be tied or their scope of activities so limited that they are forced to interpret the labor policy in text book words written by the manager. They are the medium of contact between management and labor and should be allowed to be neutral and not be tied down to an excessive attitude of loyalty to the company. They must also feel and act with loyalty to the men, they should possess and be allowed to exercise an equal degree of loyalty to both sides, with the right, and the responsibility, of advising either according to their own sincere convictions.

Both management and labor must then take the full responsibility of making important decisions after receiving such advice.

Stebbins Semtile Tanks



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Reliance Adds Plant

Part of The Reliance Electric & Engineering Co. operations were transferred early in July to a new Reliance plant now nearing completion in Ashtabula, Ohio. The move, it was explained, will enable Reliance to rearrange its over-crowded Cleveland plants for more efficient manufacture.

Stetsons Make Tour Of Coast and Southwest

M. H. Stetson, vice president and sales manager, Hawthorne Paper Co., and his wife, Mrs. Bernice Stetson, made a flying trip over most of western United States in June.

They visited Mrs. Stetson's old home, Dallas, Texas, and on the way dropped in on some Pacific Coast pulp mills and covered the length of the coast.

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Atwater 6565

WANTED: Young, progressive graduate Engineer with some paper mill experience for Southern California boxboard mill. Position under mill superintendent assisting in operation of mill and beater room. Send details of experience and background to Philip J. Meany Co., 816 W. 5th St., Los Angeles, 13.

New Research Dept.

Dr. Rodger M. Dorland is organizing a research department for Abitibi Power & Paper Co. at Sault Ste Marie, Ont. He joined Abitibi last spring after several years with the department of research and development, Masonite Corp., Laurel, Miss. Canadian-born, Dr. Dorland joined Masonite in 1940.

Paper Mills May Get More Power

Construction of a pipe line system to bring natural gas to many communities in the southeast where paper mills are located is proposed by United Gas Corp., Shreveport, La., in an application filed with the Federal Power Commission for a permit. The cost involved is estimated at $56,126,000.

The pipe line would be extended from the present terminus at Hattiesburg, Miss. A dozen paper mills are potential customers for this service as far east as the Atlantic Coast mills.

Joins Sorg Pulp Co.

John Evans, formerly technical assistant at the Canadian Pulp and Paper Institute in Montreal and recently attached to the technical staff of the Red Rock, Ont., division of Brompton Pulp & Paper Co., has joined the Sorg Pulp Co. at Port Mellon and Vancouver, B. C., in the capacity of chemist, according to Hugh Lewis, vice president and general manager.

Dr. Bates Deputy Director

Dr. John S. Bates, manager for Canada of Price & Pierce, Ltd., at Montreal, has been appointed deputy director of the company, which has its headquarters in England. Dr. Bates, recognized as one of the outstanding authorities on pulp and paper in Canada, visited west coast cities early in July.

Appointed Gen. Supt.

George Jackson, formerly with Canadian Resins & Chemicals, Ltd., has been appointed assistant general superintendent of Gaspesia Sulfite Co. at Chandler, Que. Latterly he had been assistant superintendent of control for Anglo-Canadian Pulp & Paper Mills, Quebec.

Port Arthur Promotion

A. G. Scott, formerly assistant manager of the Port Arthur mill of Providence Paper, Ltd., has been appointed assistant director of manufacturing with that division.

John N. Tuttle Joins Rhinelander

John N. Tuttle, formerly with The Glassine Paper Co., West Conshohocken, Penn., was appointed development engineer for the Rhinelander Paper Co., Rhinelander, Wisconsin, on Aug. 1.

In making the move, Chicago-born Mr. Tuttle will be nearer his old stamping grounds.

Ocean Falls Makes Less Market Pulp

Tonnage produced by Pacific Mills, Ltd., Ocean Falls, B. C., set a new all-time record for the company for the year ending April 30.

The mill manufactured 83,053 tons of newsprint, compared with 61,964 in 1945; 28,731 tons of kraft and wrapper, compared with 23,432 the previous year; 15,746 tons of liner and corrugating board, compared with 16,030.

The company manufactured less pulp for sale than in the previous year—4,786 tons compared with 7,358, and approximately the same amount of specialty papers was produced—7,919 tons, compared with 7,905 tons in 1945.

Canadian Sumner Represents Kennedy & Sons

Canadian Sumner Iron Works, Ltd., have been appointed as British Columbia representatives by the William Kennedy & Sons, Ltd., of Owen Sound, Ontario. The Kennedy organization was established in 1857.

Both companies are associated in the development of pulp and paper equipment and during a recent visit to eastern Canada, Norman Terry, secretary-treasurer of Canadian Sumner, completed arrangements whereby his company would manufacture and sell Kennedy pulp and paper mill equipment. T. Imbleau, of Kennedy, visited Vancouver, B. C., to complete arrangements.

New Members of National Stream Council

New members of the National Council for Stream Improvement are: Hollingsworth & Vose Co., Brightwater Paper Co., Crossett Paper Mills, Continental Can Co. —Hummel-Ross Div., Warrensburg Pulp & Paper Corp., Lawless Brothers, Hinsdale Paper Manufacturing Co., and Marcellus Falls Paper Mills, Inc.

Use

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American Cyanamid Product Used in Orr-Chem Felts

American Cyanamid Co.'s Textile Resin Department announces that the new Orr-Chem felts are processed with Lanaset resin, a melamine compound. Using a technique developed by the Orr Felt & Blanket Co., the normal life of papermaker's felts has been substantially increased, it is said.

Lanaset resin has been used primarily to make wool fabrics washable, through control of shrinkage and felting. It has been known for some time, however, that the treatment had many other desirable effects. Laboratory tests had shown that processing with Lanaset resin increases resistance of fabrics to standard abrasion tests. It was this characteristic that led Orr Felt & Blanket Co. to experiment with Lanaset resin for use in papemaker's felts.

General Dyestuff

Generad Dyestuff Corp. announces release of the folowing new circulars (write company at 435 Hudson St., New York, for copies):

GDC—247—Preventol GD

GDC—262—Four Phase Method of Slime Control

GDC—266—Puratized SC for Slime Control in Paper Mills.

La Fave Heads Plant

Francis G. La Fave has been promoted from night superintendent to manager of the St. Regis Paper Co., Watertown, N. Y., bag plant, according to Willard E. Hahn, manager of bag production.

Mr. La Fave replaces Budd E. Simonton, who became bag plant manager at Oswego, N. Y.

Bristol Develops New Time Cycle Controller

The Bristol Company announces the development of a new multiple-cam time cycle controller, known as the Model C500 Impulse-Sequence Cycle Controller, for timing mechanical operations in industrial processes. This instrument is designed for use on plant processes where a number of factors, such as the opening and closing of valves, switches, dampers, retorts, and presses, and the starting, stopping, or reversing of motor-driven pumps, and blowers, must be accurately timed according to a fixed program. In operation, the Model C500 Impulse- Sequence Cycle Controller actuates or engages, at exactly the correct time in each cycle, the necessary mechanical, electrical, or pneumatic devices for automatically carrying out the intended schedule.

A 12-page buletin, No. C305 (obtainable by request from The Bristol Co., Waterbury, Conn.) gives detailed information about the newly developed Model C500 Cycle Controller or process operations.

New Hooker Products List Is Available

A new edition of Hooker General Products List, Bulletin 100, has just been published by the Hooker Electrochemical Co., Niagara Falls, N. Y.

It represents a departure from previous lists in that it now comprises 20 pages of description, principal physical and chemical properties, graphic formulas, uses and shipping information, in new format and arrangement that make it easier to find information on Hooker chemicals. Copies are available when requested on company letterhead.

SKILLED LINEMEN IN THE MAKING

Without linemen you can't build electric lines. Skilled linemen have been just about as scarce as hens' teeth. To help solve the problem Puget Power inaugurated the first linemen's training school of its kind in the Northwest. 32 men in two groups, made up mostly of young veterans, have completed an intensive 13 weeks' course acquiring "know how" for maintenance, repair and extension of electric lines. This is one of the methods Puget Power is using to break "bottlenecks" in the rendering of satisfactory service.

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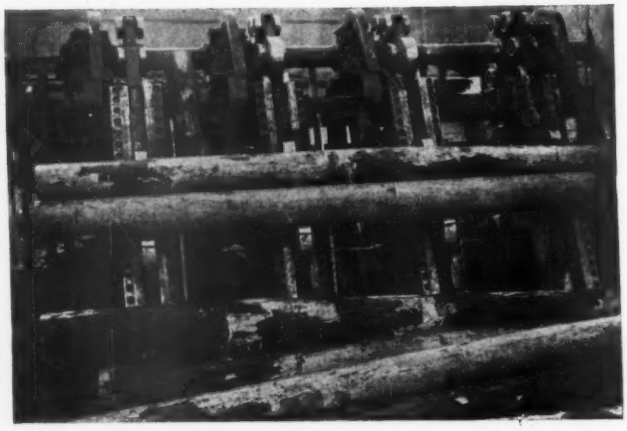

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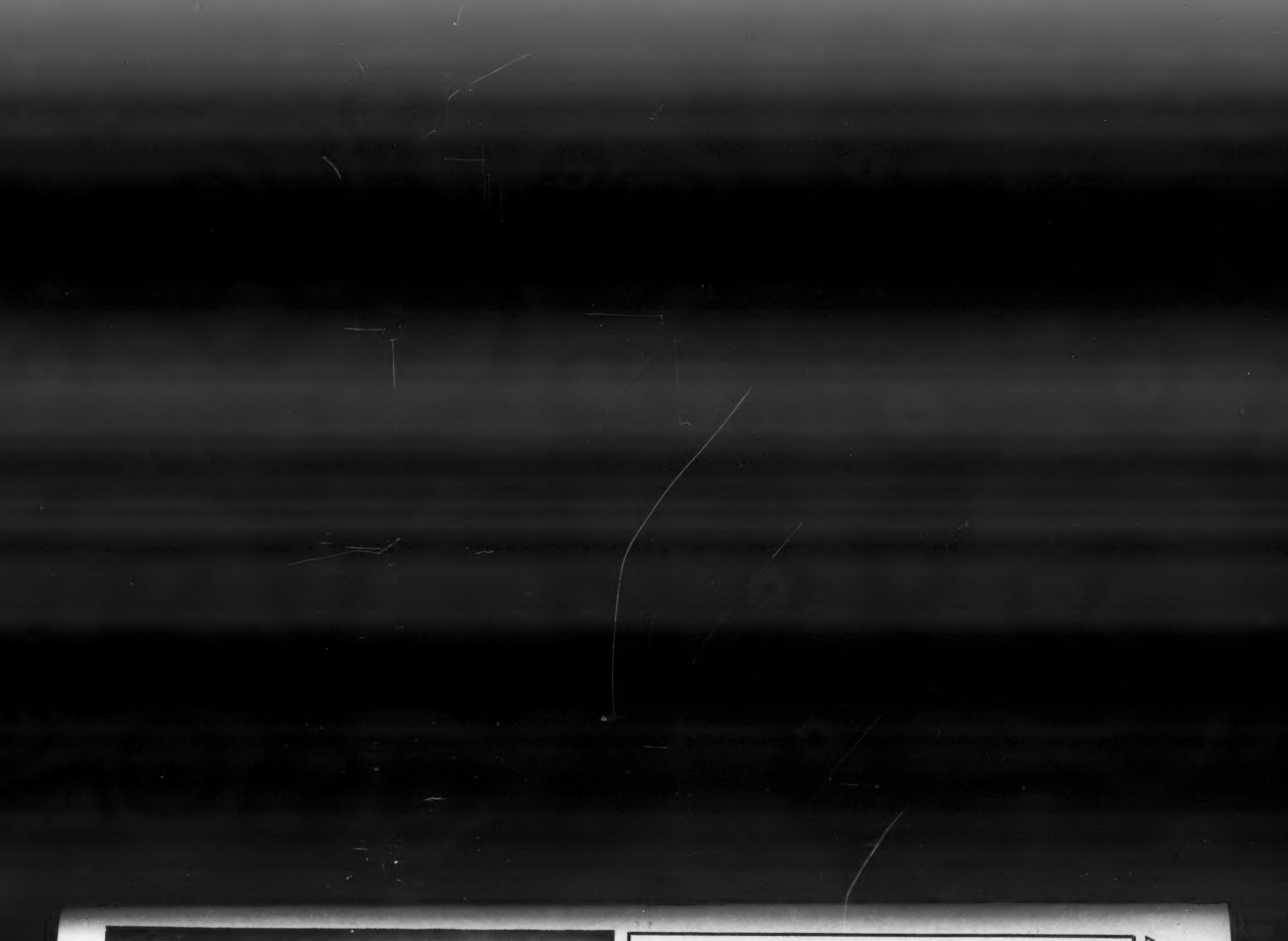
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